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SITE ASSESSMENT REPORT FOR TANK SITE 283 NS MAYPORT FL
12/1/2003
TETRA TECH NUS

Rev. 1
12/15/03

Site Assessment Report
for
Tank Site 283

Naval Station Mayport
Mayport, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0230

December 2003

Rev. 1
12/15/03

SITE ASSESSMENT REPORT
FOR
TANK SITE 283

NAVAL STATION MAYPORT
MAYPORT, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION-NAVY (CLEAN) CONTRACT

Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

Submitted by:
Tetra Tech NUS, Inc.
661 Andersen Drive
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Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0230

DECEMBER 2003

PREPARED UNDER THE SUPERVISION OF:

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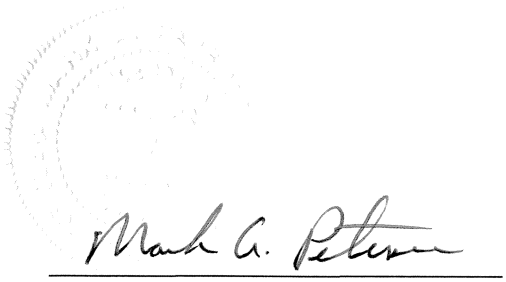
PROFESSIONAL CERTIFICATION

Site Assessment Report
Site 283
Naval Station Mayport
Mayport, Florida

This Site Assessment Report was prepared in general accordance with Chapter 62-770, Florida Administrative under the direct supervision of the undersigned geologist using geologic and hydrogeologic principles standard to the profession at the time the report was prepared. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of additional information on the assessment described in this report. This report was developed specifically for the referenced site and should not be construed to apply to any other site.



Mark Peterson, P.G.
Florida License Number PG-0001852

12/17/03

Date

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ACRONYMS

AST	Aboveground Storage Tank
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylenes
bls	Below Land Surface
CLEAN	Comprehensive Long-term Environmental Action Navy
CompQAP	Comprehensive Quality Assurance Plan
CTO	Contract Task Order
DPT	Direct Push Technology
EDB	Ethylene Dibromide
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	Flame Ionization Detector
FL-PRO	Florida Petroleum Range Organics
ft	Foot or Feet
ft/day	Feet per Day
ft/ft	Feet per Foot
GAG	Gasoline Analytical Group
HSAs	Hollow Stem Augers
ID	Inside Diameter
KAG	Kerosene Analytical Group
µg/kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
mgd	Million Gallons per Day
mg/kg	Milligrams per Kilogram
MTBE	Methyl Tert-Butyl Ether
NAVSTA	Naval Station
Navy	United States Navy
OVA	Organic Vapor Analyzer
PAHs	Polynuclear Aromatic Hydrocarbons
ppm	Parts per Million
PVC	Polyvinyl Chloride
SA	Site Assessment
SAR	Site Assessment Report
SCTLs	Soil Cleanup Target Levels
TBM	Temporary Benchmark
TCR	Tank Closure Report

ACRONYMS (Continued)

TRPH	Total Recoverable Petroleum Hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Site Assessment (SA) at Tank Site 283, Naval Station (NAVSTA) Mayport, Mayport, Florida, in accordance with the requirements of Chapter 62-770, Florida Administrative Code (FAC). This Site Assessment Report (SAR) is being submitted to the Florida Department of Environmental Protection (FDEP) for approval. A SAR summary sheet is included as Appendix A.

TtNUS performed the following tasks during the SA:

- Reviewed available United States Navy (Navy) documents and identified potential sources and receptors for petroleum hydrocarbons in the vicinity, evaluated private potable wells within a 0.25-mile radius and public water supply wells within a 0.5-mile radius, located nearby surface water bodies, and determined surface hydrology and drainage.

- Conducted a site survey to construct a site plan and collected two rounds of depth to groundwater measurements to evaluate the groundwater flow direction and gradient.

- Advanced soil borings using direct push technology (DPT) and hand augers to collect soil and groundwater samples. Soil and groundwater samples were analyzed for petroleum impacts by a mobile laboratory and a fixed-base laboratory. One soil sample was analyzed for the complete Gasoline Analytical Group (GAG) and Kerosene Analytical Group (KAG) analytical group per Chapter 62-770, FAC. Additional analyses were conducted for polynuclear aromatic hydrocarbons (PAHs).

- Installed one shallow monitoring and collected a groundwater sample. The sample was analyzed by a fixed-base laboratory for GAG and KAG per Chapter 62-770, FAC.

- Reviewed historical documents that described the lack of groundwater impacts and the presence of soil vapor readings from an organic vapor analyzer (OVA) at levels considered not to be excessively contaminated.

The results of the SA revealed soil exceeding the soil cleanup target levels (SCTLs), as defined by Chapter 62-770, FAC, in the area of former storage tanks. The groundwater at the site did not contain detectable petroleum hydrocarbons.

Based on the results of this SA, TtNUS recommends a source removal be conducted to remove shallow soils containing PAHs above FDEP SCTLs.

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

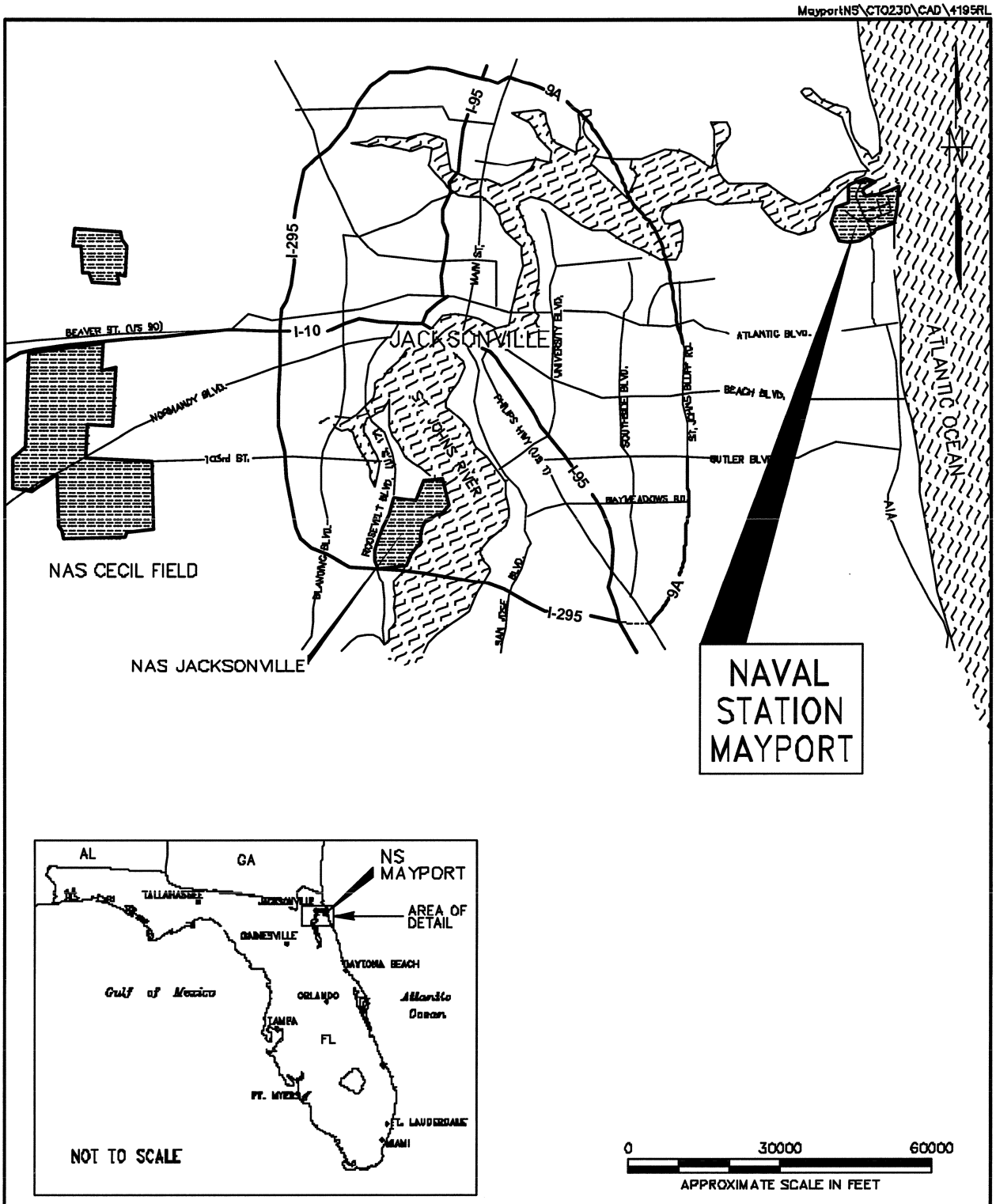
A SA was conducted at Tank Site 283 at NAVSTA Mayport by TtNUS for the Southern Division, Naval Facilities Engineering Command under Contract Task Order (CTO) 0230 for the Comprehensive Long-term Environmental Action Navy (CLEAN) III Contract Number N62467-94-D-0888. The data collected during the investigation was used to prepare a SAR. Information from the field investigation has been assimilated into this SAR to provide a characterization of site conditions from which to base future courses of action. A SAR summary sheet is included as Appendix A.

The purpose of this SA was to evaluate the extent of petroleum hydrocarbons in subsurface soils and groundwater at Tank Site 283 in accordance with the requirements of Chapter 62-770, FAC. Tank Site 283 was previously investigated in December 1992 during removal and closure of an aboveground storage tank (AST) used as a day tank and an underground storage tanks (UST). Excessively contaminated soil and petroleum-impacted groundwater was documented in the Tank Closure Report (TCR) [Hydro-Terra, 1992], which is provided as Appendix B.

1.2 FACILITY AND SITE LOCATION

NAVSTA Mayport is located within the corporate limits of the City of Jacksonville, Duval County, Florida, approximately 14 miles to the northeast of downtown Jacksonville and is adjacent to the town of Mayport. A Site Vicinity Map is provided as Figure 1-1. The Station complex is located on the northern end of a peninsula bound by the Atlantic Ocean to the east and the St. Johns River to north. NAVSTA Mayport occupies the entire northern part of the peninsula except for the town of Mayport, which is located to the west between the station and the St. Johns River.

Tank Site 283 is located on the north side of Massey Avenue approximately 500 feet (ft) to the west of the south leg of the turning basin. A Site Location Map based on a United States Geological Survey (USGS) topographic map (Mayport, Florida revised 1992) is provided as Figure 1-2. Since about 1992, the fuel systems, generator, and pump house at Tank Site 283 have been removed, but the large water tank (Tank Number 288) remains at the site. The area has become an open yard with mostly gravel-covered parking and some asphalt and grassy areas, which is used by private contractors as a work yard and general storage area. Several utilities traverse the site.



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COST/SCHED–AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1–1 / REV. 0

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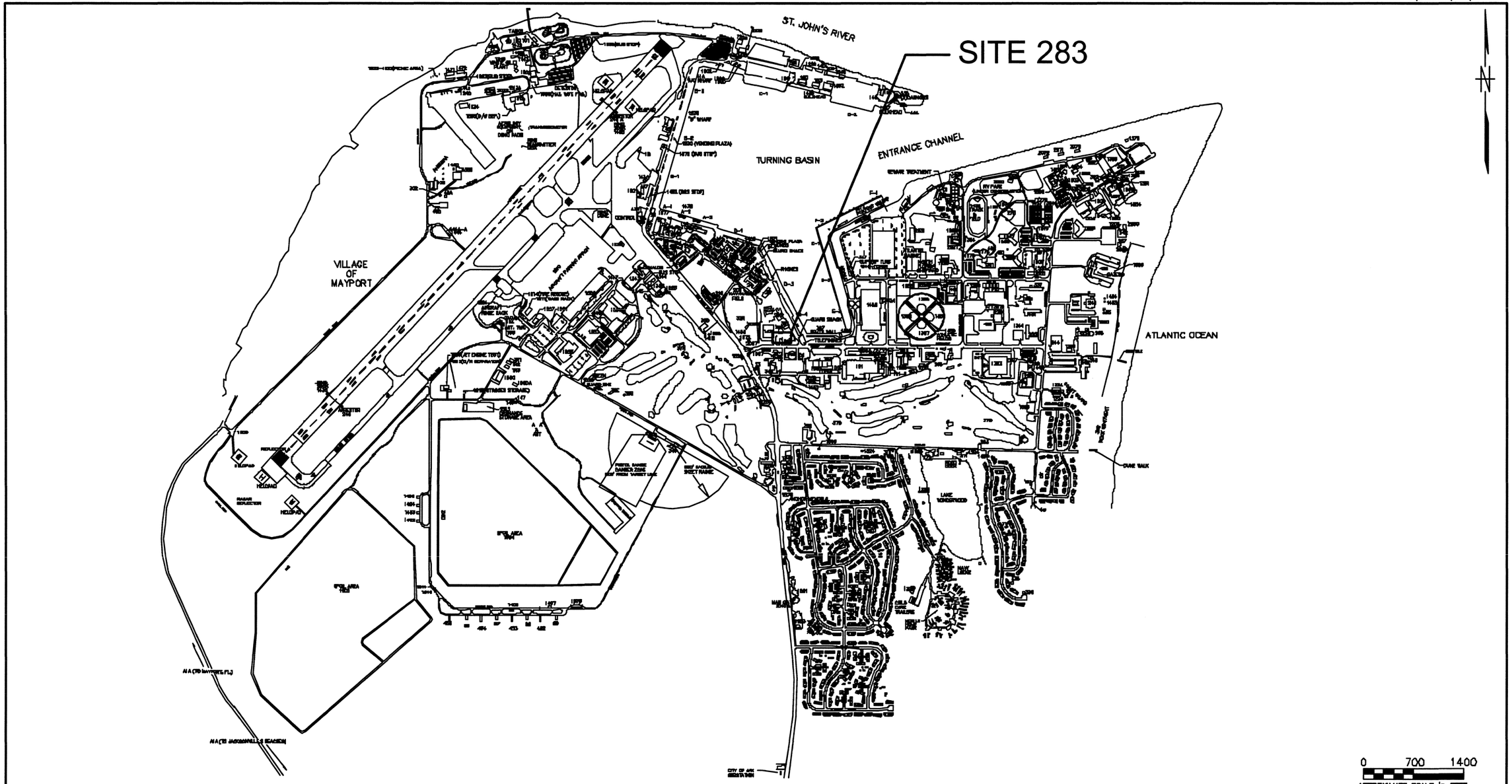

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SITE LOCATION MAP
TANK SITE 283
SITE ASSESSMENT REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO.	4195
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1.3 REGIONAL GEOLOGY AND HYDROGEOLOGY

Northeast Florida is underlain by two main aquifer systems: the surficial aquifer system and the Floridan aquifer system. The surficial aquifer system in the vicinity of NAVSTA Mayport includes sediments of the Upper Hawthorn Group, upper Miocene and Pliocene deposits, and Pleistocene and Holocene deposits [United States Department of Agriculture (USDA), 1978]. These undifferentiated surficial deposits extend from land surface to the top of the Hawthorn Group about 50 ft below land surface (bls) (USGS, 1997).

The surficial aquifer system consists of fine-grained sands near the surface interspersed with thin (less than 1 ft) clay lenses and generally grades to a mixture of sand and coarse shell fragments from 30 to 40 ft bls. The base of the surficial aquifer system is the intermediate confining unit, which is a sequence of marine clays and discontinuous limestone stringers (Spechler, 1994).

The Floridan aquifer system is the principal source of groundwater for public drinking water in most of northern peninsular Florida. In the area of investigation, the system is comprised of (from youngest to oldest) the Ocala Formation, the Avon Park Formation, and the Oldsmar Limestone. The Hawthorn Group, a confining unit between the surficial aquifer system and Floridan aquifer system, unconformably overlies the Floridan aquifer (USDA, 1978).

1.4 POTABLE WATER WELL SURVEY

The potable water supply information presented in this report was obtained from a Contamination Assessment Report for Site 1330 prepared by the United States Army Corps of Engineers (USACE) in 1992 (USACE, 1992). Personnel at the water treatment plant and the maintenance contractor, Johnson Controls/HILL, confirm the accuracy of the water well information.

Potable water is supplied to NAVSTA Mayport by four on-base supply wells. Currently, three of the wells are active and one is inactive. One of the three active wells is 12 inches in diameter, and the other two are 16-inch diameter wells. All three wells draw water from the Floridan aquifer at depths of 1,000 ft. Well capacities range between 2.1 and 2.9 million gallons per day (mgd) with a combined total pumping capacity of 9 mgd. The base water treatment plant treats the water prior to distribution.

The locations of the potable wells are depicted on Figure 1-3. Potable well information is summarized on Table 1-1. Three wells are within a 0.50-mile radius of the study site.

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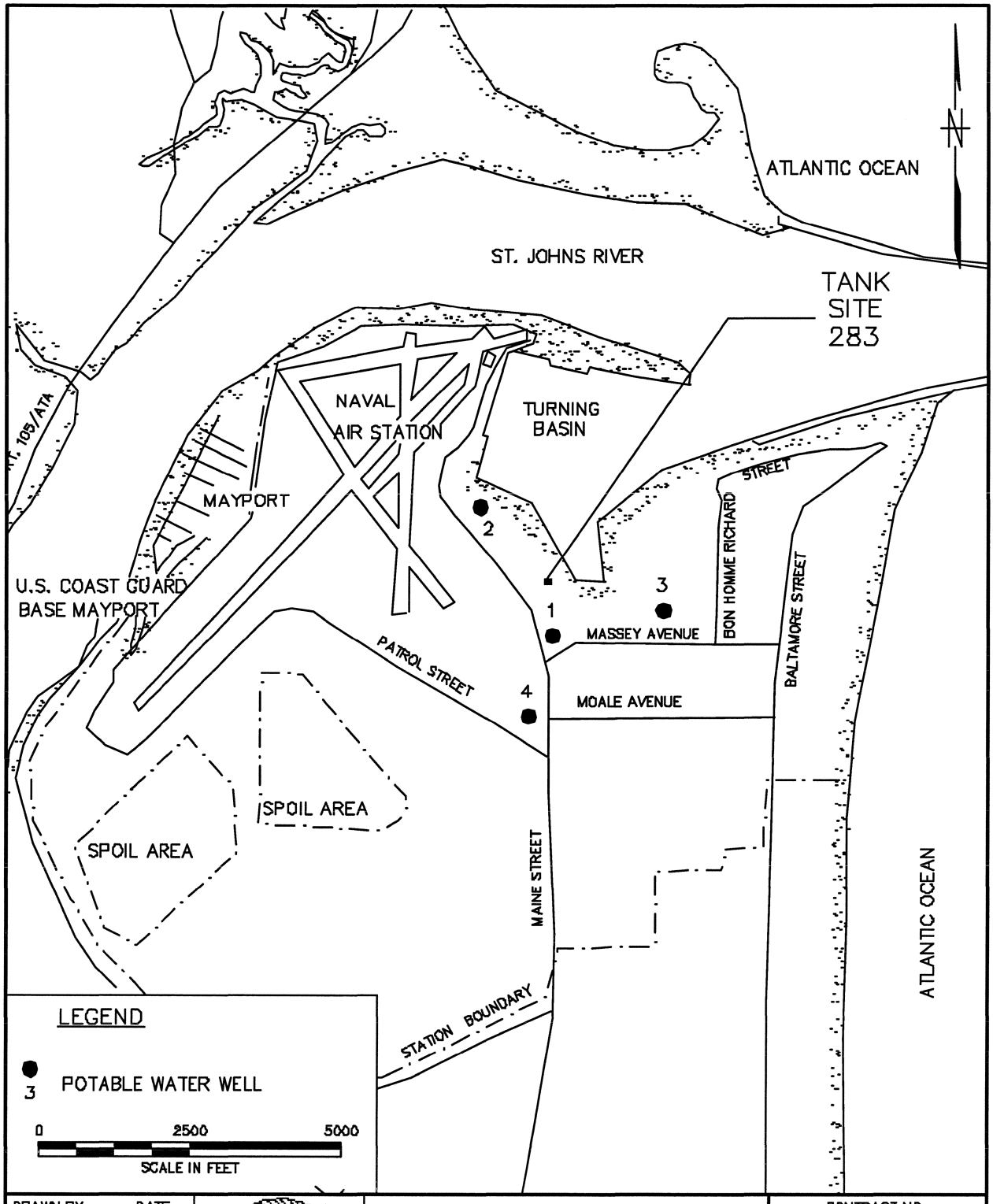

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Table 1-1
Potable Water Well Survey Results

Site Assessment Report, Tank Site 283
Naval Station Mayport
Mayport, Florida

Well Identification	Distance from Site (miles)	Diameter (inches)	Depth of Well (ft bls)	Use
1	0.3 miles	12	1,000	In use
2	0.3 miles	16	1,000	In use
3	0.3 miles	16	1,000	In use

1.5 TOPOGRAPHY AND DRAINAGE

NAVSTA Mayport is located in the Southeastern Coastal Plain physiographic province. The topography is mostly low, gentle to flat, and composed of a series of ancient marine terraces. NAVSTA Mayport is located within the Silver Bluff Terrace. The average land surface elevation at NAVSTA Mayport is between 8 and 10 ft above mean sea level, a topographic map is provided as Figure 1-4 (USGS, 1992).

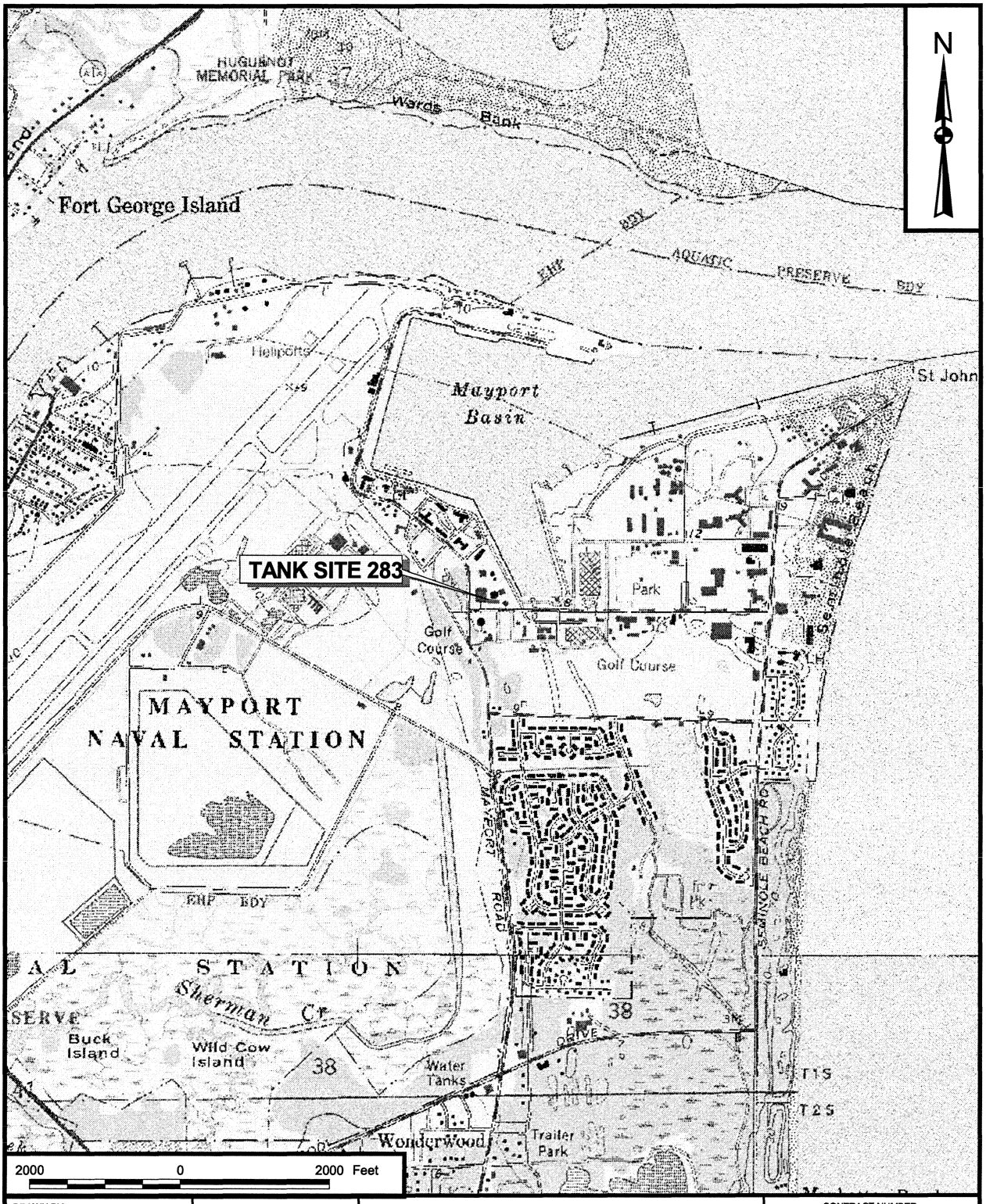
Tank Site 283 is located near the southern tip of the turning basin. Site surface drainage is to the south and east toward Massey Avenue, but drainage is generally sluggish and poorly defined due to low relief over the area.

1.6 LAND USE IN SITE VICINITY

The site is located in an industrial/commercial area of the Station. Buildings in the site vicinity are used for operations such as supply and maintenance in support of fleet activities. Vehicles and heavy equipment are common in the area.

1.7 SITE DESCRIPTION

The site is mostly unpaved. A large portion of the site consists of a lime rock parking area and grass covered areas as shown in Figure 1-5. Equipment and electrical power connector cords for the ships are stored in the gravel parking and grassy areas. Structures in the vicinity of the former tank site include a municipal water tank and maintenance facility garage. A chain link fence encircles the entire grounds. South and east of the municipal water tank is the former location of Building 283. The former UST and AST were located near the northwestern corner of this building. Building 283 was used to house the potable well pumps.



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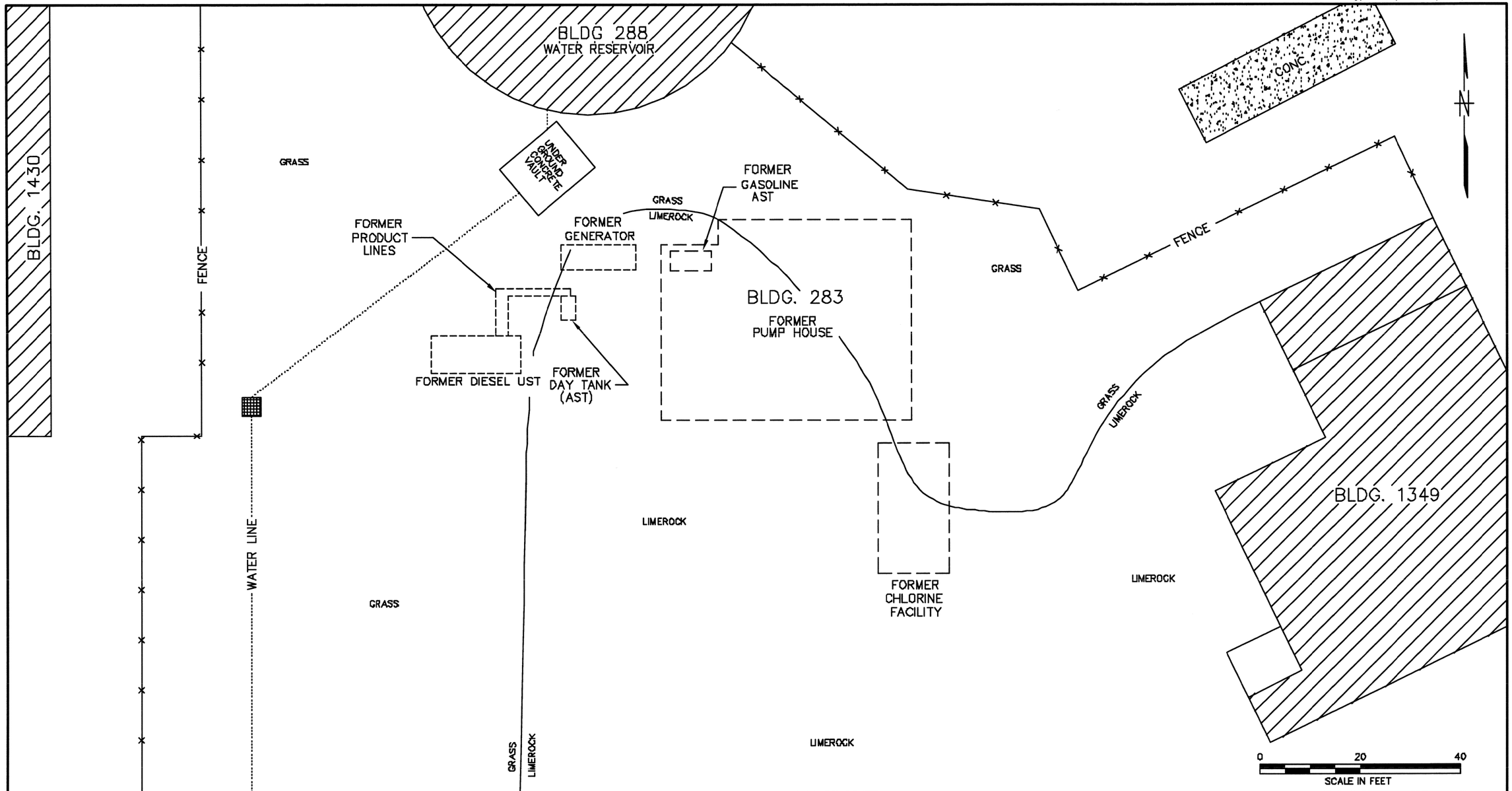

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SITE PLAN
TANK SITE 283
SITE ASSESSMENT REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4195
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1.8 SITE HISTORY AND OPERATIONS

The TCR (Hydro-Terra, 1993) for Site 283 documented removal of a 2000-gallon diesel UST and a 300-gallon AST day tank was conducted on December 23, 1992. Both tanks were single-walled and made of steel, and the dates of installation are unknown. The removal work was performed in accordance with the then current regulation in Chapter 17-761, FAC. The 2000-gallon diesel UST was connected via product lines to a 300-gallon AST, which acted as a day tank for the generator that supplied power to Building 283. Figure 1-5 shows the former locations of the two fuel systems, generator, pump house, and nearby buildings. A copy of the TCR is provided in Appendix B.

The TCR indicates that only the UST was visually inspected for evidence of corrosion. Although there was evidence of corrosion, no holes, cracks, or evidence of discharge were reported. During the tank removal, eight samples were collected from the excavated soils. The recorded soil vapor data indicated the presence of petroleum hydrocarbon vapors in five of the eight soil samples collected, ranging from 2 parts per million (ppm) to 25 ppm. The samples were collected from the sides and bottom of the open tank pit. Four of the five soil samples near the bottom of the pit indicated the presence of petroleum hydrocarbon vapors. Two of the samples recorded valued in excess of 50 ppm, but they were collected from below the water table, disallowing the data. Soil samples collected above the water table were contaminated below the 50 ppm designation for excessively contaminated soil per Chapter 62-770, FAC. No soil samples were collected for fixed-base laboratory analysis.

The water table was encountered at approximately 5 ft bls during the tank removal. One groundwater sample was collected from a temporary well presumably installed in the tank pit. Groundwater samples were analyzed for United States Environmental Protection Agency (USEPA) Method 602 [including methyl-tert-butyl ether (MTBE)] and USEPA Method 610 PAHs. No groundwater impacts were recorded. Following the tank removal, the excavated soil was placed back into the excavation. No groundwater samples were collected from the area of the diesel AST.

1.9 PURPOSE OF CURRENT INVESTIGATION

The objective of the most current field investigation was to determine if soil and/or groundwater have been adversely impacted by previous operations at the site. The data collected during the investigation was used to prepare this SAR as required by Chapter 62-770.600, FAC. This SAR provides a characterization of site conditions from which to base future courses of action. A SAR summary sheet is provided as Appendix A.

2.0 SUBSURFACE INVESTIGATION METHODS

2.1 QUALITY ASSURANCE

The site investigation was conducted in accordance with the Standard Operating Procedures prescribed by the FDEP Quality Assurance Section Document DER-001/92 and adopted by the TtNUS Comprehensive Quality Assurance Plan (CompQAP) Number 980038.

2.2 DETERMINATION OF GROUNDWATER FLOW DIRICTION

On July 9 and 10, 2002, TtNUS personnel installed four piezometers (PZ-01, PZ-02, PZ-03, and PZ-04) in a rectangular array at the subject site for the purpose of estimating groundwater flow direction. The top-of-casing elevations of the four piezometers were surveyed relative to a selected temporary benchmark (TBM) on site. The TBM was assigned an elevation of 25 ft. Depth-to-water was measured from the top-of-casing of the monitoring well and three piezometers using an electronic water level indicator. The relative water table elevation at each location was calculated by subtracting the depth-to-water measurement from the surveyed top-of-casing elevation, and a groundwater flow direction (pieziometric) map was generated from the water table elevation data.

2.3 SOIL QUALITY ASSESSMENT

2.3.1 Soil Borings

A total of 39 shallow soil borings (SB-01 through SB-39) and 1 deep boring (at the location of SB-01) were advanced around the area of the former day tank and UST that both contained diesel (see Figure 2-1). Shallow borings were advanced using a stainless steel, 3-inch, inside diameter (ID) hand-auger assembly, and the deep boring was advanced using a truck mounted DPT rig. Initially, 12 borings were installed on July 9 and 10, 2002. This initial soil survey located low level PAH impacts that resulted in additional work. Additional borings were completed on October 30, 2002; February 24, 2003; and June 15, 2003, for a total of 39 soil borings. The multiple sampling events were required due to a step-by-step process needed to estimate the extent of PAH impacts to shallow soils.

In completing this assessment, shallow borings were advanced by hand auger methods to an approximate depth of 3 ft and 5 ft bls. Boring SB-01 was advanced to a depth of 34 ft bls and was sampled to establish site lithology. The boring was advanced from land surface to 34 ft bls using a DPT push rod attached to a truck mounted GeoProbe. Four-ft long, stainless steel macrocore samplers lined with plastic sleeves were attached to the end of the DPT push rods and were used to extract soil samples. A TtNUS scientist

described the material encountered during advancement of the borings. A soil boring log for SB-01 is included in Appendix C.

Drill cuttings were containerized as investigation derived waste in 55-gallon drums prior to disposal offsite at a licensed disposal facility.

2.3.2 Field Screening Procedures

Soil samples collected from boring locations SB-1 through SB-16 and SB-34 through SB-39 were field screened at 1 ft, 3 ft, and in some cases 5 ft bls. Soil boring locations are shown on Figure 2-1. Soil samples were screened for organic vapors using an OVA-flame ionization detector (FID) and visually screened for petroleum staining. Soil borings SB-17 through SB-33 were only visually screened. Soil vapor analyses were performed in accordance with the headspace screening method described in Chapter 62-770.200(2), FAC.

2.3.3 Soil Sampling Strategy for Laboratory Analysis

2.3.3.1 Mobile Laboratory

During July 9 and 10, 2002, soil samples were collected for mobile laboratory analysis from SB-1 through SB-10. One soil sample from each boring was submitted to KB Labs, Inc., an on-site mobile laboratory, for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX); MTBE; naphthalene; 1-methylnaphthalene; and 2-methylnaphthalene. Each sample was collected in a 4-ounce glass jar provided by the mobile laboratory. Mobile laboratory soil sample locations are shown on Figure 2-1. The sample selected for mobile laboratory analysis was a split of the sample exhibiting the highest organic vapor reading at each location or, in most cases, was collected immediately above the water table since field screening results did not indicate the presence of contamination.

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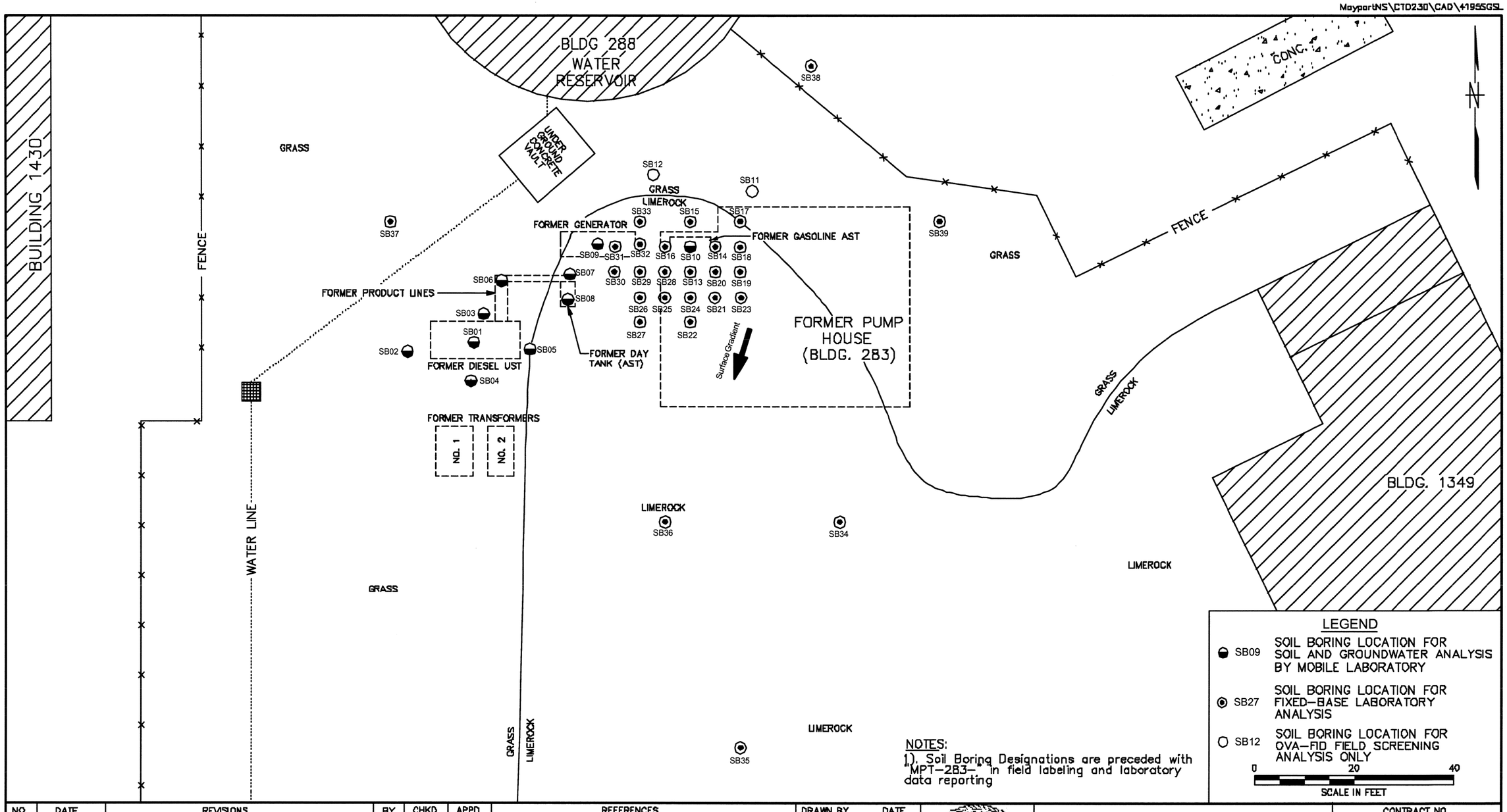

NOTES:
1). Soil Boring Designations are preceded with "MPT-283-" in field labeling and laboratory data reporting

LEGEND

- SB09 — SOIL BORING LOCATION FOR SOIL AND GROUNDWATER ANALYSIS BY MOBILE LABORATORY
- SB27 — SOIL BORING LOCATION FOR FIXED-BASE LABORATORY ANALYSIS
- SB12 — SOIL BORING LOCATION FOR OVA-FID FIELD SCREENING ANALYSIS ONLY

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DEPARTMENT OF THE NAVY — NAVFAC ENGINEERING COMMAND — SOUTHERN DIVISION

SOIL AND GROUNDWATER SAMPLE LOCATION MAP
TANK SITE 283
SITE ASSESSMENT REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

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2.3.3.2 Fixed-Base Laboratory

On July 10, 2003, one soil sample location was selected for confirmatory analysis via a fixed-base laboratory. Only one confirmatory sample was collected since no contamination had been previously detected. This sample was submitted to the fixed-base laboratory for analysis of the GAG and KAG analytical group per Chapter 62-770, FAC. Soil sample SB-10 was selected from 3 ft bls for laboratory analysis since it recorded the highest site OVA reading of 8.4 ppm. Analytical results from the SB-10 soil sample indicated the presence of PAH contamination at levels exceeding FDEP SCTLs. PAHs were not included in the field screening methods due to cost and mobile laboratory limitations. As a result, additional mobilization became necessary to collect soil samples for PAH analysis via USEPA Method 8270 to estimate the extent of impact to soil at the site. Additional soil samples were collected from 3 ft bls on October 30, 2002; February 24, 2003; and June 15, 2003, from soil borings SB-13 though SB-39. Soil samples were also collected from 1 ft bls on June 15, 2003, for soil borings SB-28 and SB-34 through SB-39. These additional samples were collected to assess if the soil was impacted from a land surface release. Soil analytical results are discussed in Section 3.3.

Soil samples collected from SB-1 through SB-16 were analyzed at Accutest Laboratories located in Orlando, Florida, and soil samples collected from SB-17 through SB-39 were analyzed by ENCO Laboratories located in Jacksonville, Florida.

2.4 GROUNDWATER ASSESSMENT METHODS

2.4.1 Groundwater Sampling

2.4.1.1 DPT Grab Samples

During the mobile laboratory screening activities (July 9 and 10, 2002), groundwater samples were collected at soil borings SB-01 through SB-10 using DPT (i.e., Geoprobe) methodology. A total of 12 borings depicted on Figure 2-4 were completed during this period of time, although only 10 groundwater samples were screened by mobile laboratory. Soil borings SB-11 and SB-12 were not completed to the groundwater depth. One deep boring was completed at soil boring SB-01 to a depth of 34 ft bls where groundwater samples were collected from depths of 24 ft and 34 ft bls.

The groundwater samples were obtained using a detachable drive tip attached to a 48-inch, retractable stainless steel well screen encased in the lead drive casing. After the drill stem was advanced into the water-bearing zone, the casing was withdrawn 48 inches to allow influx of groundwater to the retractable screen. For groundwater sampling, Tygon® tubing was inserted into the probe and connected to a peristaltic pump. Several screen volumes were then pumped from the probe in order turbidity. After purging, groundwater samples were collected into 40-milliliter vials. The samples were immediately

delivered to the on-site mobile laboratory for analysis of BTEX, MTBE, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.

2.4.2 Monitoring Well Installation

On July 23, 2002, one permanent shallow monitoring well, MPT-283-MW-01 (MW-01), was installed by Groundwater Protection, Inc. under the supervision of TtNUS personnel. The well was installed at a location believed to have the greatest potential of contamination based on location (former tank location) and on screening information. The well location is the same location as SB-10 as shown on Figure 2-1.

2.4.2.1 Borehole Advancement

A posthole digger was used to excavate the borehole for MPT-283-MW-01 from ground surface to a depth of 5 ft bls to verify absence of subsurface utilities. From that point (5 ft bls) to total depth (13.5 ft bls), the borehole was advanced using 4¼-inch ID hollow stem augers (HSAs) attached to a truck-mounted drill rig. Soil cuttings were described during borehole advancement to further characterize site lithology. A soil boring log is included in Appendix C.

2.4.2.2 Well Construction and Development

The borehole for monitoring well MPT-283-MW-01 was advanced to a total depth of 13.5 ft bls. The well was constructed of 2-inch diameter, 0.010-inch mill slotted Schedule 40 polyvinyl chloride (PVC) screen (10-ft lengths), and solid risers (flush threaded) were inserted through the HSAs after attaining total depth. Graded 20/30 silica sand was poured between the PVC well and HSAs at the surface as the augers were being slowly removed from the borehole to create a filter pack in the annular space between borehole and monitoring well. The filter pack was poured into the annular space to a depth approximately 1.5 ft above the top of the screen (i.e., 1.5 ft bls) and was capped by 1 ft of 30/65 fine sand. The remaining annular space from the top of the fine sand seal to within 6 inches of ground surface was filled with Type I Portland cement grout. The well was completed at the surface with an 8-inch diameter steel manhole equipped with bolt down cover. Manholes were secured in place with concrete pads 2-ft square and 6 inches thick. A well completion log is provided in Appendix D.

After completion, MPT-283-MW-01 was developed using a submersible pump. Field measurements of pH, temperature, and specific conductance were recorded during development. The well was developed until field measurements became stable and water was virtually clear. Water quality stabilization was determined using the following criteria: temperature ±5 degrees Celsius, pH ±0.1 unit, and specific conductance ±10 micro ohms per centimeter. A monitoring well development record is provided in Appendix E (Field Data Sheets). All development water was containerized for disposal in 55-gallon steel drums. The water in the drums was sampled prior to disposal.

2.4.2.3 Permanent Monitoring Well Samples

On July 30, 2002, TtNUS personnel collected groundwater samples from MPT-283-MW-01. Prior to sampling, a minimum three well volumes of groundwater were removed from the well using the low flow quiescent purging method. During purging, field parameters pH, specific conductance, turbidity, dissolved oxygen, temperature, and oxidation/reduction potential were measured periodically using a Horiba U-22 instrument. A groundwater sampling log and low flow purge sheet compiled during purging and sampling of monitoring well MPT-283-MW-01 are provided in Appendix E.

Samples were collected in accordance with the procedures described in the FDEP-approved CompQAP in effect at the time of sampling. After collection, samples were immediately placed on ice and shipped under proper chain-of-custody protocol to Accutest Laboratories of Orlando for analysis of the GAG and KAG constituents, volatile organic compounds (VOCs) using USEPA Method 8021B, PAHs using USEPA Method 8310, ethylene dibromide (EDB) using USEPA Method 504.1, lead using USEPA Method 6010, and total recoverable petroleum hydrocarbons (TRPH) using Florida Petroleum Range Organics (FL-PRO). Sampling activities were documented in a site-specific field logbook.

3.0 RESULTS OF INVESTIGATION

3.1 SITE GEOLOGY AND HYDROGEOLOGY

3.1.1 Lithology

Lithology at the site includes a mottled fine to medium-grained sand that underlies the site. Intermixed with the sand is a varying percentage of shell hash to a depth of 34 ft bls. The depth of 34 ft was determined to be within the surficial aquifer and at a depth able to determine if vertical impacts were present. Due to the homogeneity of the subsurface and a limited number of deep borings, no lithologic cross-section was constructed. Soil boring logs are included as Appendix C.

3.1.2 Groundwater Flow Direction

Using the method discussed in Section 2.2, the direction of groundwater flow in the uppermost surficial aquifer underlying the site was calculated to be northerly. Groundwater elevation data obtained on July 9 and 10, 2002, are presented in Table 3-1 and a groundwater flow map (July 10, 2002) generated from this data is provided as Figure 3-1. Groundwater measurements take on July 9, 2002, are similar in direction to the findings of July 10, 2002. The measured depth to groundwater at the piezometers was approximately 3.5 to 5.0 ft below the top of casing.

3.1.3 Aquifer Classification and Characteristics

The State of Florida classifies the surficial aquifer underlying the site as G-II. Previous USGS aquifer test data at NAVSTA Mayport indicate that the average hydraulic conductivity of the surficial aquifer is approximately 4.34 ft per day (ft/day) (USGS, 1997).

The horizontal groundwater (hydraulic) gradient across the site was evaluated from water level data listed in Table 3-1 and shown on Figure 3-1. The horizontal hydraulic gradient beneath the site, calculated from pieziometric contours depicted on Figure 3-1, was calculated to be 0.0008 ft per ft (ft/ft).

Based on information provided by Driscoll (Driscoll, 1986) and on lithologic descriptions of material encountered during the current investigation, the effective porosity of surficial aquifer sediments was estimated to be 0.30.

Potential movement of groundwater at the site may be described in terms of transportation by natural flow using Darcy's Law.

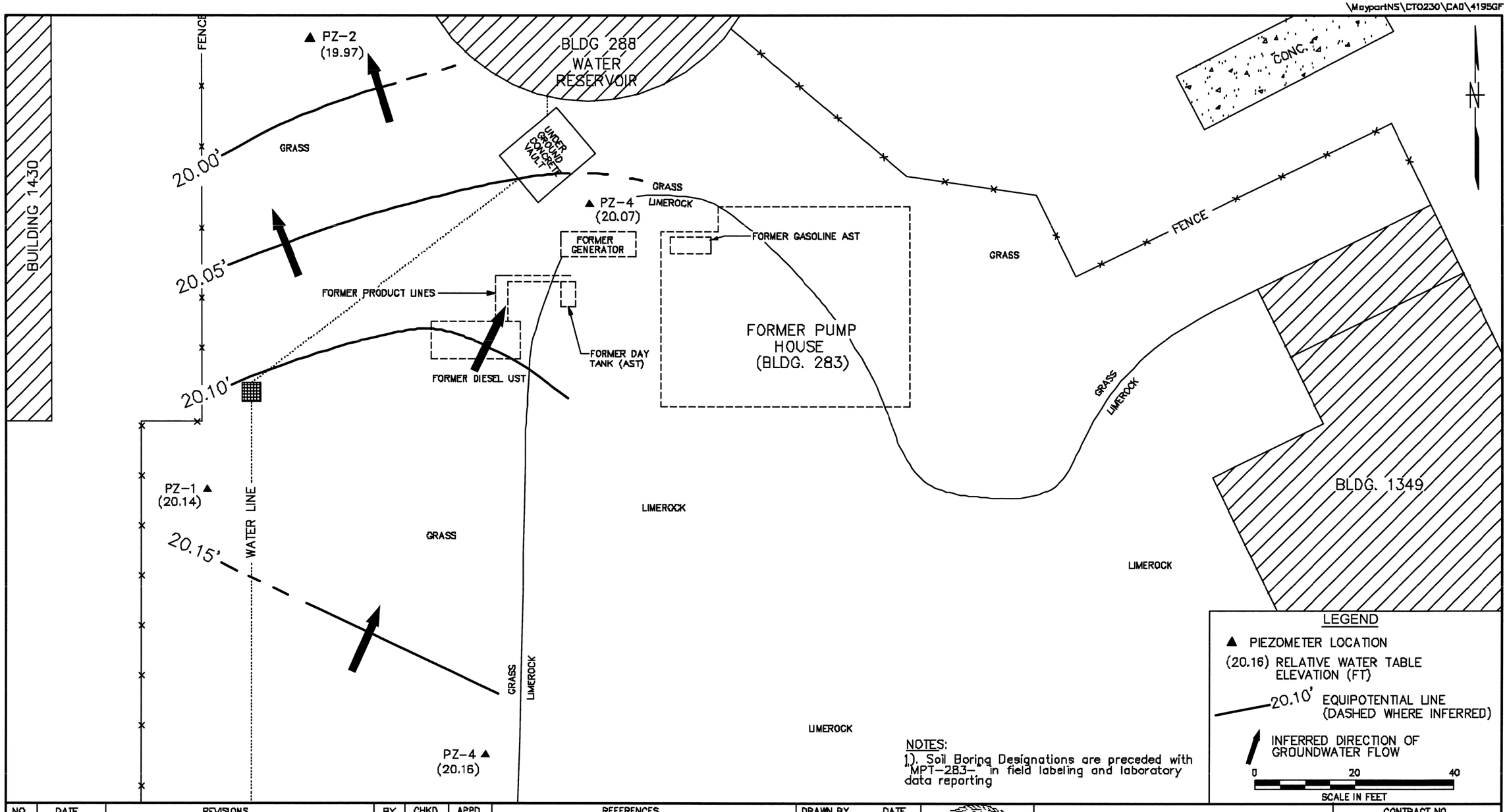
Table 3-1
Groundwater Elevation Measurements

Site Assessment Report, Tank Site 283
Naval Station Mayport
Mayport, Florida

Water Table Elevations - 1st Event		07/09/02		
Monitoring Well Identification	**Screened Interval Depth (ft bls)**	**Top-of-Casing Elevation (ft)***	**Depth to Water Below Top-of-Casing (ft)**	**Water Elevation (ft)**
Pz-1	3 to 8	25	4.83	20.17
Pz-2	3 to 8	24.18	4.08	20.10
Pz-3	3 to 8	23.55	3.36	20.19
Pz-4	3 to 8	24.06	4.02	20.04
Water Table Elevations - 2nd Event		07/10/02		
Monitoring Well Identification	**Screened Interval Depth (ft bls)**	**Top-of-Casing Elevation (ft)***	**Depth to Water Below Top-of-Casing (ft)**	**Water Elevation (ft)**
Pz-1	3 to 8	25	4.86	20.14
Pz-2	3 to 8	24.18	4.11	20.07
Pz-3	3 to 8	23.55	3.39	20.16
Pz-4	3 to 8	24.06	4.05	20.01

Notes:
Piezometers were installed on July 9, 2002, and were measured on July 9 and July 10, 2002.
*An arbitrary elevation of 25 ft was assigned to the top of casing at PZ-1.

\MayportNS\CTO230\CAD\4195GF



LEGEND

- ▲ PIEZOMETER LOCATION
- (20.16) RELATIVE WATER TABLE ELEVATION (FT)
- 20.10' EQUIPOTENTIAL LINE (DASHED WHERE INFERRED)
- INFERRED DIRECTION OF GROUNDWATER FLOW

0 20 40
SCALE IN FEET

NOTES:
1). Soil Boring Designations are preceded with "MPT-283-" in field labeling and laboratory data reporting

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK DATE 11/22/02
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

POTENTIOMETRIC SURFACE CONTOUR MAP,
JULY 10, 2002
TANK SITE 283
SITE ASSESSMENT REPORT
MAYPORT NAVAL STATION
MAYPORT, FLORIDA

CONTRACT NO. 4195
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-1
REV. 0

FORM CADD NO. SDIV_SHLDWG - REV 0 - 1/20/98

Darcy's Law may be expressed as follows:

$$V = \frac{(K \times I)}{n}$$

where:

V = average seepage velocity

K = hydraulic conductivity

n = effective porosity

I = average hydraulic gradient

Using a hydraulic conductivity of 4.34 ft/day, a hydraulic gradient of 0.0018 ft/ft, an inferred effective porosity value of 0.30, and Darcy's law, the groundwater seepage velocity across the site was calculated at 0.027 ft/day or 9.49 ft per year in a northern direction.

3.2 SOIL SCREENING RESULTS

Soil vapor screening methods and sampling locations for headspace analyses are discussed in Section 2.3.2. Results of the soil vapor survey are listed on Table 3-2 and the soil boring locations are depicted on Figure 2-1. The highest measurement for soil samples screened was SB-10 with an organic vapor reading of 8.4 ppm. This concentration is below the FDEP 50 ppm action level for excessively contaminated soil. Soils collected from soil samples SB-1 through SB-16 and SB 34 through SB-39 were screened visually and with an OVA-FID, while samples collected from SB-17 through 33 were only visually screened. No visual petroleum impacts were noted for all samples collected.

Two soil samples SB-08 and SB-10 collected from below the groundwater level did record levels greater that 10 ppm. These samples were collected from below the groundwater level and were determined to be false positives due to either moisture or methane.

3.3 SOIL SAMPLE ANALYTICAL RESULTS

3.3.1 Mobile Laboratory

Soil samples SB-1 through SB-10 were the only samples analyzed by a mobile laboratory. Mobile laboratory soil analytical results are summarized on Table 3-3. No constituents analyzed (BTEX, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene) were reported above the instrument detection limits. It should be noted that PAH analyses were not conducted by the mobile laboratory due to cost limitations. The sample locations are presented on Figure 2-1. A complete report provided by KB Labs, Inc. is included in Appendix F.

Table 3-2
Soil Vapor Measurements

Site Assessment Report, Tank Site 283
Naval Station Mayport
Mayport, Florida

Soil Boring Number	Date of Measurement	Sample Depth (ft bls)	Headspace Readings (ppm)		
			Total Organic Reading	Carbon Filtered Reading	Net Reading
SB-01	7/9/2002	1	0	0	0
		3	0	0	0
		4.5	0	0	0
SB-02	7/9/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
SB-03	7/9/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
SB-04	7/9/2002	1	0	0	0
		3	0	0	0
		4.5	0	0	0
SB-05	7/9/2002	1	0	0	0
		3	0	0	0
		4.5	0	0	0
SB-06	7/9/2002	1	0	0	0
		3	0	0	0
		4	0	0	0
SB-07	7/9/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
SB-08	7/9/2002	1	0	0	0
		3	0	0	0
		5	10	0	10 *
SB-09	7/9/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
SB-10	7/9/2002	1	0	0	0
		3	8.4	0	8.4
		5	568	106	462 *
SB-11	7/10/2002	1	0	0	0
		3	0	0	0
		5	0	0.0	o
SB-12	7/10/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
SB-13	10/3/2002	1	0	0	0
		3	0	0	0
SB-14	10/3/2002	1	0	0	0
		3	0	0	0

See notes at end of table.

Table 3-2 (Continued)
Soil Vapor Measurements

Site Assessment Report, Tank Site 283
Naval Station Mayport
Mayport, Florida

Soil Boring Number	Date of Measurement	Sample Depth (ft bls)	Headspace Readings (ppm)		
			Total Organic Reading	Carbon Filtered Reading	Net Reading
SB-15	10/3/2002	1	0	0	0
		3	0	0	0
SB-16	10/3/2002	1	0	0	0
		3	0	0	0
SB-34	5/15/2003	1	0	0	0
		3	0	0	0
SB-35	5/15/2003	1	0	0	0
		3	0	0	0
SB-35	5/15/2003	1	0	0	0
		3	0	0	0
SB-37	5/15/2003	1	0	0	0
		3	0	0	0
SB-38	5/15/2003	1	0	0	0
		3	0	0	0
SB-39	5/15/2003	1	0	0	0
		3	0	0	0

Notes:
* = soil sample collected in area affected by groundwater, no petroleum odor associated with sample.
Wet soils encountered at depths ranging from approximately 3.5 to 4 ft bls.

Table 3-3
Mobile Laboratory Soil Results

Site Assessment Report, Tank Site 283
Naval Station Mayport
Mayport, Florida

Compound	Direct Exposure Residential[1]	Leachability Based on Groundwater Criteria[1]	SB-01	SB-02	SB-03	SB-04	SB-05
			3/5/2001	3/5/2001	3/5/2001	3/6/2001	3/5/2001
		Sample Interval	3	3	3	3	3
VOCs (USEPA Method 8021B) (mg/kg)							
MTBE	3200	0.2	0.200	0.200	0.200	0.200	0.200
Benzene	1.1	0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Toluene	380	0.5	<0.500	<0.500	<0.500	<0.500	<0.500
Ethylbenzene	1100	0.6	<0.600	<0.600	<0.600	<0.600	<0.600
Total Xylenes	5900	0.2	<0.200	<0.200	<0.200	<0.200	<0.200
Napthalene	40	1.7	<1.7	<1.7	<1.7	<1.7	<1.7
1,Methylnapthalene	68	2.2	<2.2	<2.2	<2.2	<2.2	<2.2
2,Methylnapthalene	80	6.1	<6.1	<6.1	<6.1	<6.1	<6.1

Compound	Direct Exposure Residential[1]	Leachability Based on Groundwater Criteria[1]	SB-06	SB-07	SB-08	SB-09	SB-10
			3/5/2001	3/5/2001	3/5/2001	3/5/2001	3/5/2001
		Sample Interval	2.5	3	3	3	3
VOCs (USEPA Method 8021B) (mg/kg)							
MTBE	3200	0.2	<.200	<.200	<.200	<.200	<.200
Benzene	1.1	0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Toluene	380	0.5	<0.500	<0.500	<0.500	<0.500	<0.500
Ethylbenzene	1100	0.6	<0.600	<0.600	<0.600	<0.600	<0.600
Total Xylenes	5900	0.2	<0.200	<0.200	<0.200	<0.200	<0.200
Napthalene	40	1.7	<1.7	<1.7	<1.7	<1.7	<1.7
1,Methylnapthalene	68	2.2	<2.2	<2.2	<2.2	<2.2	<2.2
2,Methylnapthalene	80	6.1	<6.1	<6.1	<6.1	<6.1	<6.1

Notes:
[1]Chapter 62-770, FAC (April 30, 1999)
µg/kg = micrograms per kilogram

3.3.2 Fixed-Base Laboratory

On July 10, 2002, one soil sample was collected at 3 ft bls from soil boring SB-10, the soil boring with the greatest OVA measurement. This sample was obtained for fixed-base laboratory analysis of petroleum GAG/KAG parameters to comply with Chapter 62-770, FAC. These parameters include PAHs using USEPA Method 8270, VOCs using USEPA Method 8260B (purgeable aromatics and purgeable halocarbons), lead using USEPA Method 6010, EDB using USEPA Method 504.1, and TRPH using Method FL-PRO. Based on the analytical results, constituents that exceeded SCTLs were only present in the PAH analysis that recorded excessive values of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Given these findings, additional soil samples (SB-13 through SB-39) were collected for analysis of PAH constituents on October 30, 2002; February 24, 2003; and June 15, 2003. The results from the additional soil samples identified the same constituents or less numbers of the same contaminants identified in the soil boring SB-10. No additional SCTLs were exceeded. Soil sample results in excess of leachability, residential, and commercial SCTLs for SB-10 through SB-39 are provided in Table 3-4.

Soil sample locations that exceeded the residential direct exposure SCTL limit include sample locations SB-10, SB-13, SB-14, SB-16 through SB-29, SB-31, and SB-39. Figure 3-2 depicts the sample location and concentration of residential SCTL exceedences. Based on residential SCTL results, the impacts are not fully defined using this action level, and impacts extend to the eastern fence line of the site.

Commercial or industrial SCTLs exceedences included 11 soil sample locations (SB-10, SB-13, SB-14, SB-16, SB-19, SB-22, SB24 through SB-28, and SB-31). Figure 3-3 documents the area of commercial or industrial SCTL exceedences, which is approximately 60 ft by 40 ft and extends to just above the water table. The water table is approximately 3.5 ft bls in this area. The area of soil impacts beyond the commercial or industrial exceedences level is estimated to be about 311 cubic yards of soil.

The SCTL of soil leachability for groundwater criteria was exceeded at 3 soil sample locations (SB-10, SB-13, and SB-28. Figure 3-4 depicts the sample ID, location, and analytical result for SCTL leachability. This area of leachability impact is approximately 15 ft by 15 ft and is included within the residential and commercial or industrial SCTL exceedences areas. Soil boring SB-10 is the location of monitoring well MPT-283-MW-01, which is located down gradient of SB-28 and SB-13. The area of soil impacts greater than the leachability exceedences is about 30 cubic yards.

The sample location with the greatest PAH constituent concentration of benzo(a)anthracene [6.0 milligrams per kilogram (mg/kg)], benzo(a)pyrene (8.7 mg/kg), benzo(b)fluoranthene (9.8 mg/kg), dibenzo(a,h)anthracene (3.0 mg/kg), and indeno(1,2,3-cd)pyrene (6.0 mg/kg) all were collected at soil sample SB-28. A complete laboratory report is provided as Appendix G.

Table 3-4
Summary of Fixed-Base Laboratory Soil Sample Resutls

Site Assessment Report, Tank Site 283
Naval Station Mayport
Mayport, Florida

Compound	Direct Exposure Residential[1] (mg/kg)	Commercial / Industrial (mg/kg)	Leachability Based Criteria[1] (mg/kg)	SB-10	SB-13	SB-14	SB-15	SB-16	SB-17	SB-18
			Sample Date	07/10/02	10/03/02	10/03/02	10/03/02	10/03/02	02/24/03	02/24/03
VOCs (USEPA Method 8021B) (mg/kg)				3 ft	3 ft	3 ft	3 ft	3 ft	3 ft	3 ft
Benzene	1.1	1.6	0.007	<0.0058	NA	NA	NA	NA	NA	NA
Toluene	380	2600	0.5	<0.0058	NA	NA	NA	NA	NA	NA
Ethylbenzene	1100	8400	0.6	<0.0058	NA	NA	NA	NA	NA	NA
Total Xylenes	5900	40000	0.2	<0.017	NA	NA	NA	NA	NA	NA
MTBE	3200	22000	0.2	<0.0058	NA	NA	NA	NA	NA	NA
PAHs (USEPA Method 8310) (mg/kg)										
Naphthalene	40	270	1.7	<1.9	<2	<0.42	<0.4	<2.1	<0.0037	0.011
2-methylnaphthalene	80	560	6.1	<1.9	<2	<0.42	<0.4	<2.1	<0.0037	0.01
1-methylnaphthalene	68	470	2.2	<1.9	<2	<0.42	<0.4	<2.1	<0.0037	0.0077
Acenaphthylene	1100	11000	27	<3.8	<2	<0.84	<0.81	<4.2	<0.0037	<0.0037
Acenaphthene	1900	18000	2.1	<3.8	<2	<0.84	<0.81	<4.2	<0.0037	0.034
Anthracene	18000	260000	2500	1.74	<2	0.285	<0.4	<2.1	<0.0037	0.051
Flourene	2200	28000	160	<1.9	<2	0.304	<0.4	<2.1	<0.0037	0.032
Benzo (a) anthracene	1.4	5	3.2	3.49	3.99	0.918	<0.4	3.01	0.0037	0.11
Benzo (a) pyrene	0.1	0.5	8	**3.37**	**2.34**	**0.626**	<0.081	**1.78**	0.006	0.17
Benzo (b) flouranthene	1.4	4.8	10	2.39	1.63	0.427	<0.081	1.22	0.0063	0.2
Benzo (g,h,i) perylene	2300	41000	32000	2.07	1.96	0.576	<0.081	1.32	0.001	0.19
Benzo(k)fluoranthene	15	52	25	1.67	1.36	0.354	<0.081	1.01	0.004	0.11
Chrysene	140	450	77	4.17	3.32	0.898	<0.4	2.73	0.004	0.14
Dibenzo (a,h) anthracene	0.1	0.5	30	**0.854**	0.408	0.111	<0.081	0.331	<0.0037	0.087
Fluoranthene	2900	48000	1200	13.2	9.8	2.37	<0.4	7.58	0.011	0.47
Indeno (1,2,3-cd) pyrene	1.5	5.3	28	1.88	1.7	0.454	<0.081	1.21	<0.0037	0.18
Phenanthrene	2000	30000	250	11.5	8.36	1.87	<0.4	6.95	0.0071	0.34
Pyrene	2200	37000	880	8.31	5.67	1.54	<0.4	4.7	0.0085	0.33
FL-PRO (USEPA Method 8270) (mg/kg)										
TRPH	340	2500	340	56.9	NA	NA	NA	NA	NA	NA

See notes at end of table.

Table 3-4 (Continued)
Summary of Fixed-Base Laboratory Soil Sample Resutls

Site Assessment Report, Tank Site 283
Naval Station Mayport
Mayport, Florida

Compound	Direct Exposure Residential[1] (mg/kg)	Commercial / Industrial (mg/kg)	Leachability Based Criteria[1] (mg/kg)	SB-19	SB-20	SB-21	SB-22	SB-23	SB-24	SB-25
			Sample Date	02/24/03	02/24/03	02/24/03	02/24/03	02/24/03	02/24/03	02/24/03
VOCs (USEPA Method 8021B) (mg/kg)				3 ft	3 ft	3 ft	3 ft	3 ft	3 ft	3 ft
Benzene	1.1	1.6	0.007	NA	NA	NA	NA	NA	NA	NA
Toluene	380	2600	0.5	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1100	8400	0.6	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	5900	40000	0.2	NA	NA	NA	NA	NA	NA	NA
MTBE	3200	22000	0.2	NA	NA	NA	NA	NA	NA	NA
PAHs (USEPA Method 8310) (mg/kg)										
Naphthalene	40	270	1.7	0.2	<0.018	0.02	0.18	<0.0038	0.096	0.086
2-methylnaphthalene	80	560	6.1	0.19	<0.018	0.02	0.14	<0.0038	0.096	0.071
1-methylnaphthalene	68	470	2.2	0.14	<0.018	<0.018	0.088	<0.0038	0.080	<0.071
Acenaphthylene	1100	11000	27	<0.073	<0.018	<0.018	<0.072	<0.0038	<0.073	<0.071
Acenaphthene	1900	18000	2.1	0.84	0.048	0.089	0.59	0.012	0.44	0.39
Anthracene	18000	260000	2500	1.4	0.096	0.17	0.77	0.019	0.82	0.86
Flourene	2200	28000	160	0.84	0.048	0.094	0.66	0.01	0.40	0.43
Benzo (a) anthracene	1.4	5	3.2	2.4	0.19	0.23	1.4	0.049	1.30	1.00
Benzo (a) pyrene	0.1	0.5	8	**3.6**	0.32	0.33	**1.9**	0.076	**2.00**	**1.40**
Benzo (b) flouranthene	1.4	4.8	10	3.8	0.4	0.36	2.6	0.095	2.70	1.70
Benzo (g,h,i) perylene	2300	41000	32000	2.7	0.3	0.3	1.6	0.091	1.70	1.30
Benzo(k)fluoranthene	15	52	25	2.7	0.26	0.33	1.4	0.06	1.80	1.00
Chrysene	140	450	77	3.1	0.27	0.31	1.8	0.064	1.80	1.20
Dibenzo (a,h) anthracene	0.1	0.5	30	**1.3**	0.12	0.13	**0.72**	0.037	**0.73**	0.45
Fluoranthene	2900	48000	1200	9.1	0.79	0.94	5.9	0.16	5.10	3.90
Indeno (1,2,3-cd) pyrene	1.5	5.3	28	2.4	0.27	0.28	1.4	0.079	1.60	1.10
Phenanthrene	2000	30000	250	8.0	0.62	0.83	5.9	0.11	4.20	3.60
Pyrene	2200	37000	880	6.4	0.54	0.67	4.0	0.12	3.60	2.60
FL-PRO (USEPA Method 8270) (mg/kg)										
TRPH	340	2500	340	NA	NA	NA	NA	NA	NA	NA

See notes at end of table.

Table 3-4 (Continued)
Summary of Fixed-Base Laboratory Soil Sample Resutls

Site Assessment Report, Tank Site 283
Naval Station Mayport
Mayport, Florida

Compound	Direct Exposure Residential[1] (mg/kg)	Commercial / Industrial (mg/kg)	Leachability Based Criteria[1] (mg/kg)	SB-26	SB-27	SB-28	SB-28	SB-29	SB-30	SB-31
			Sample Date	02/24/03	02/24/03	05/18/03	02/24/03	02/24/03	02/24/03	02/24/03
VOCs (USEPA Method 8021B) (mg/kg)				3 ft	3 ft	1 ft	3 ft	3 ft	3 ft	3 ft
Benzene	1.1	1.6	0.007	NA	NA	NA	NA	NA	NA	NA
Toluene	380	2600	0.5	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1100	8400	0.6	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	5900	40000	0.2	NA	NA	NA	NA	NA	NA	NA
MTBE	3200	22000	0.2	NA	NA	NA	NA	NA	NA	NA
PAHs (USEPA Method 8310) (mg/kg)										
Naphthalene	40	270	1.7	<0.036	<0.036	<0.0034	0.82	<0.018	<0.0038	0.26
2-methylnaphthalene	80	560	6.1	<0.036	<0.036	<0.0034	0.76	<0.018	<0.0038	0.24
1-methylnaphthalene	68	470	2.2	<0.036	<0.036	<0.0034	0.50	<0.018	<0.0038	<0.18
Acenaphthylene	1100	11000	27	<0.036	<0.036	<0.0034	<0.18	<0.018	<0.0038	<0.18
Acenaphthene	1900	18000	2.1	0.14	0.14	0.0076	2.60	0.09	0.01	1.00
Anthracene	18000	260000	2500	0.32	0.31	0.018	4.30	0.17	0.02	2.00
Flourene	2200	28000	160	0.14	0.15	0.0072	2.80	0.09	0.01	1.00
Benzo (a) anthracene	1.4	5	3.2	0.48	0.47	0.07	**6.00**	0.23	0.04	2.90
Benzo (a) pyrene	0.1	0.5	8	**0.67**	**0.68**	0.067	**8.70**	0.32	0.06	**3.80**
Benzo (b) flouranthene	1.4	4.8	10	0.82	0.98	0.079	**9.80**	0.40	0.08	**4.90**
Benzo (g,h,i) perylene	2300	41000	32000	0.66	0.59	0.041	6.00	0.30	0.06	3.40
Benzo(k)fluoranthene	15	52	25	0.62	0.40	0.048	5.40	2.30	0.05	3.60
Chrysene	140	450	77	0.59	0.58	0.067	7.10	2.80	0.05	3.30
Dibenzo (a,h) anthracene	0.1	0.5	30	0.25	0.22	<0.0034	**3.00**	0.06	0.02	**1.40**
Fluoranthene	2900	48000	1200	1.70	1.60	0.140	25.00	0.80	0.15	10.00
Indeno (1,2,3-cd) pyrene	1.5	5.3	28	0.58	0.53	0.038	**6.00**	0.27	0.01	3.10
Phenanthrene	2000	30000	250	1.30	1.30	0.079	22.00	0.69	0.12	8.90
Pyrene	2200	37000	880	1.20	1.10	0.100	17.00	0.53	0.10	7.20
FL-PRO (USEPA Method 8270) (mg/kg)										
TRPH	340	2500	340	NA	NA		NA	NA	NA	NA

See notes at end of table.

Table 3-4 (Continued)
Summary of Fixed-Base Laboratory Soil Sample Resutls

Site Assessment Report, Tank Site 283
Naval Station Mayport
Mayport, Florida

Compound	Direct Exposure Residential[1] (mg/kg)	Commercial / Industrial (mg/kg)	Leachability Based Criteria[1] (mg/kg)	SB-32	SB-33	SB-34	SB-34	SB-35	SB-35	SB-36
			Sample Date	02/24/03	02/24/03	05/15/03	05/15/03	05/15/03	05/15/03	05/15/03
VOCs (USEPA Method 8021B) (mg/kg)				3 ft	3 ft	1 ft	3 ft	1 ft	3 ft	1 ft
Benzene	1.1	1.6	0.007	NA	NA	NA	NA	NA	NA	NA
Toluene	380	2600	0.5	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1100	8400	0.6	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	5900	40000	0.2	NA	NA	NA	NA	NA	NA	NA
MTBE	3200	22000	0.2	NA	NA	NA	NA	NA	NA	NA
PAHs (USEPA Method 8310) (mg/kg)										
Naphthalene	40	270	1.7	<0.0036	<0.0039	<0.0035	<0.0038	<0.0035	<0.0039	<0.0034
2-methylnaphthalene	80	560	6.1	<0.0036	<0.0039	<0.0035	<0.0038	<0.0035	<0.0039	<0.0034
1-methylnaphthalene	68	470	2.2	<0.0036	<0.0039	<0.0035	<0.0038	<0.0035	<0.0039	<0.0034
Acenaphthylene	1100	11000	27	<0.0036	<0.0039	<0.0035	<0.0038	<0.0035	<0.0039	<0.0034
Acenaphthene	1900	18000	2.1	0.0072	<0.0039	<0.0035	<0.0038	<0.0035	<0.0039	<0.0034
Anthracene	18000	260000	2500	0.013	<0.0039	<0.0035	<0.0038	0.005	0.005	<0.0034
Flourene	2200	28000	160	0.0068	<0.0039	<0.0035	<0.0038	0.005	<0.039	<0.0034
Benzo (a) anthracene	1.4	5	3.2	0.038	<0.0039	<0.0035	<0.0038	0.015	0.0093	<0.0034
Benzo (a) pyrene	0.1	0.5	8	0.061	<0.0039	0.0077	<0.0038	0.026	0.016	0.0082
Benzo (b) flouranthene	1.4	4.8	10	0.078	<0.0039	<0.0035	<0.0038	0.032	0.016	0.005
Benzo (g,h,i) perylene	2300	41000	32000	0.066	<0.0039	<0.0035	<0.0038	0.028	0.018	0.001
Benzo(k)fluoranthene	15	52	25	0.063	<0.0039	<0.0035	<0.0038	0.017	0.0093	<0.0034
Chrysene	140	450	77	0.05	<0.0039	<0.0035	<0.0038	0.017	0.0096	<0.0034
Dibenzo (a,h) anthracene	0.1	0.5	30	0.027	<0.0039	<0.0035	<0.0038	<0.0035	<0.0039	<0.0034
Fluoranthene	2900	48000	1200	0.13	<0.0039	0.0038	0.0041	0.027	0.019	0.0058
Indeno (1,2,3-cd) pyrene	1.5	5.3	28	0.059	<0.0039	<0.0035	<0.0038	0.026	0.016	0.0085
Phenanthrene	2000	30000	250	0.087	<0.0039	<0.0035	<0.0038	0.014	0.0089	<0.0034
Pyrene	2200	37000	880	0.098	<0.0039	0.0035	<0.0038	0.020	0.014	0.0048
FL-PRO (USEPA Method 8270) (mg/kg)										
TRPH	340	2500	340	NA	NA	NA	NA	NA	NA	NA

See notes at end of table.

Table 3-4 (Continued)
Summary of Fixed-Base Laboratory Soil Sample Resutls

Site Assessment Report, Tank Site 283
Naval Station Mayport
Mayport, Florida

Compound	Direct Exposure Residential[1] (mg/kg)	Commercial / Industrial (mg/kg)	Leachability Based Criteria[1] (mg/kg)	SB-36	SB-37	SB-37	SB-38	SB-38	SB-39	SB-39
			Sample Date	05/15/03	05/15/03	05/15/03	05/15/03	05/15/03	05/15/03	05/15/03
VOCs (USEPA Method 8021B) (mg/kg)				3 ft	1 ft	3 ft	1 ft	3 ft	1 ft	3 ft
Benzene	1.1	1.6	0.007	NA	NA	NA	NA	NA	NA	NA
Toluene	380	2600	0.5	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1100	8400	0.6	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	5900	40000	0.2	NA	NA	NA	NA	NA	NA	NA
MTBE	3200	22000	0.2	NA	NA	NA	NA	NA	NA	NA
PAHs (USEPA Method 8310) (mg/kg)										
Naphthalene	40	270	1.7	<0.0035	<0.0034	<0.0036	<0.0034	<0.0039	0.005	<0.0038
2-methylnaphthalene	80	560	6.1	<0.0035	<0.0034	<0.0036	<0.0034	<0.0039	0.005	<0.0038
1-methylnaphthalene	68	470	2.2	<0.0035	<0.0034	<0.0036	<0.0034	<0.0039	0.0037	<0.0038
Acenaphthylene	1100	11000	27	<0.0035	0.0037	0.0036	<0.0034	<0.0039	0.004	0.0042
Acenaphthene	1900	18000	2.1	<0.0035	<0.0034	<0.0036	<0.0034	<0.0039	0.0017	0.0014
Anthracene	18000	260000	2500	<0.0035	0.0067	0.0062	<0.0034	<0.0039	0.026	0.03
Flourene	2200	28000	160	<0.0035	<0.0034	<0.0036	<0.0034	<0.0039	0.012	0.015
Benzo (a) anthracene	1.4	5	3.2	<0.0035	0.021	0.015	<0.0034	<0.0039	0.099	0.085
Benzo (a) pyrene	0.1	0.5	8	<0.0035	0.034	0.025	<0.0034	<0.0039	0.12	0.11
Benzo (b) flouranthene	1.4	4.8	10	<0.0035	0.045	0.031	<0.0034	<0.0039	0.2	0.14
Benzo (g,h,i) perylene	2300	41000	32000	<0.0035	0.038	0.025	<0.0034	<0.0039	0.11	0.096
Benzo(k)fluoranthene	15	52	25	<0.0035	0.026	0.021	<0.0034	<0.0039	0.078	0.088
Chrysene	140	450	77	<0.0035	0.023	0.018	<0.0034	<0.0039	0.11	0.098
Dibenzo (a,h) anthracene	0.1	0.5	30	<0.0035	<0.0034	<0.0036	<0.0034	<0.0039	<0.0034	<0.0038
Fluoranthene	2900	48000	1200	<0.0035	0.039	0.032	0.0034	<0.0039	0.22	0.21
Indeno (1,2,3-cd) pyrene	1.5	5.3	28	<0.0035	0.036	0.024	<0.0034	<0.0039	0.11	0.088
Phenanthrene	2000	30000	250	<0.0035	0.017	0.015	<0.0034	<0.0039	0.18	0.17
Pyrene	2200	37000	880	<0.0035	0.030	0.024	<0.0034	<0.0039	0.16	0.14
FL-PRO (USEPA Method 8270) (mg/kg)										
TRPH	340	2500	340	NA	NA	NA	NA	NA	NA	NA

See notes at end of table.

Table 3-4 (Continued)
Summary of Fixed-Base Laboratory Soil Sample Resutls

Site Assessment Report, Tank Site 283
Naval Station Mayport
Mayport, Florida

Notes:
[1]Chapter 62-770, FAC (April 30, 1999)
The quality control for this data has only been checked by the laboratory.
NA = not analyzed
Shaded = Exceeds residential and leachability SCTLs
bold = Exceedes industrail/commercial SCTLs
All samples collected from 1ft or 3 ft bls
mg/kg = milligrams per kilogram

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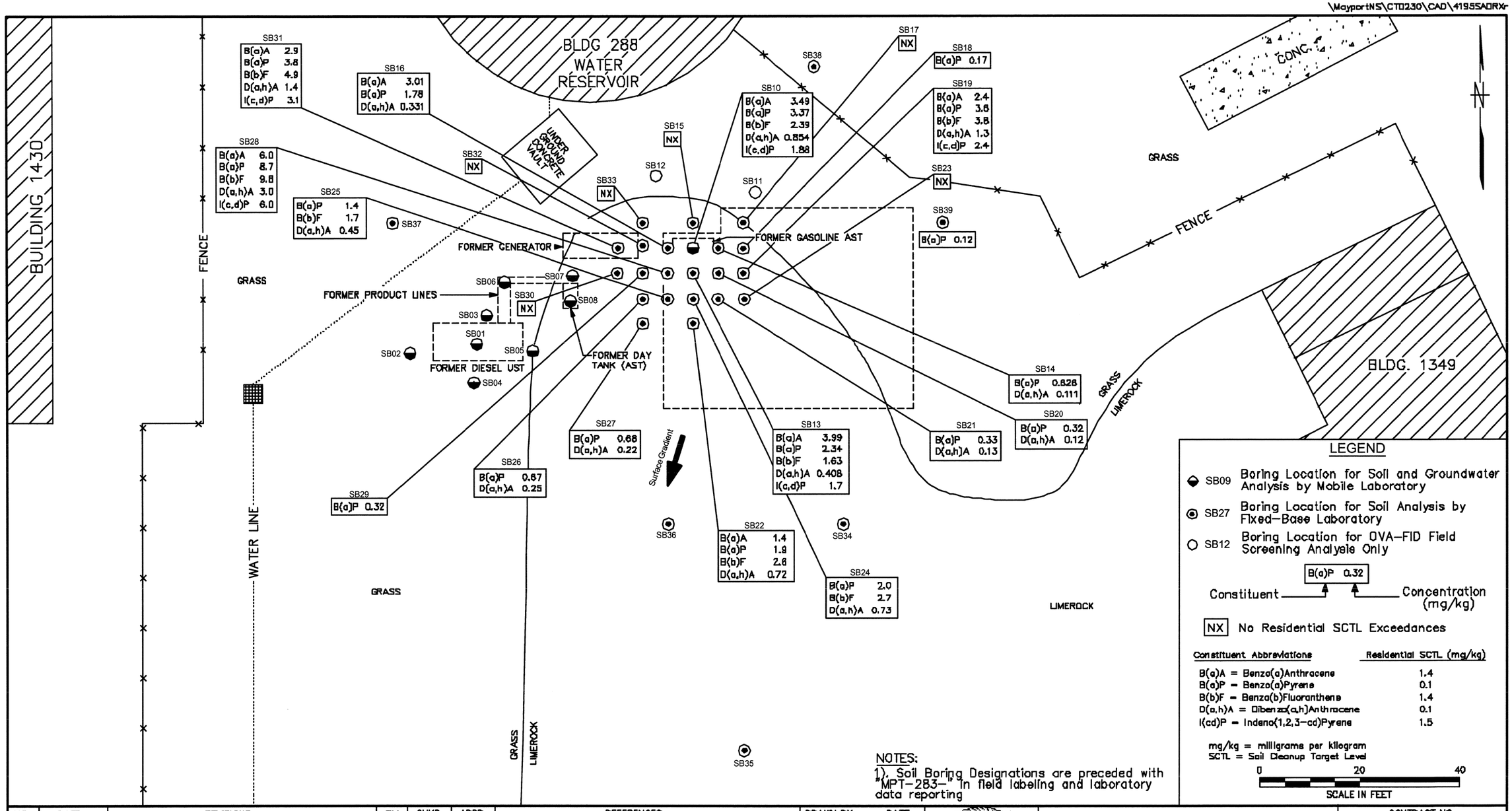

LEGEND

- SB09 — Boring Location for Soil and Groundwater Analysis by Mobile Laboratory
- SB27 — Boring Location for Soil Analysis by Fixed-Base Laboratory
- SB12 — Boring Location for OVA-FID Field Screening Analysis Only

B(a)P 0.32 — Constituent / Concentration (mg/kg)

NX — No Residential SCTL Exceedances

Constituent Abbreviations	Residential SCTL (mg/kg)
B(a)A = Benzo(a)Anthracene	1.4
B(a)P = Benzo(a)Pyrene	0.1
B(b)F = Benzo(b)Fluoranthene	1.4
D(a,h)A = Dibenzo(a,h)Anthracene	0.1
I(cd)P = Indeno(1,2,3-cd)Pyrene	1.5

mg/kg = milligrams per kilogram
SCTL = Soil Cleanup Target Level

0 20 40
SCALE IN FEET

NOTES:
1). Soil Boring Designations are preceded with "MPT-283-" in field labeling and laboratory data reporting

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK DATE 10/16/03
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

SOIL ANALYTICAL RESULTS EXCEEDING RESIDENTIAL SCTLs
TANK SITE 283
SITE ASSESSMENT REPORT
MAYPORT NAVAL STATION
MAYPORT, FLORIDA

CONTRACT NO. 4195
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-2 REV. 0

FORM CADD NO. SDIV_BHLDWG — REV D — 1/20/98

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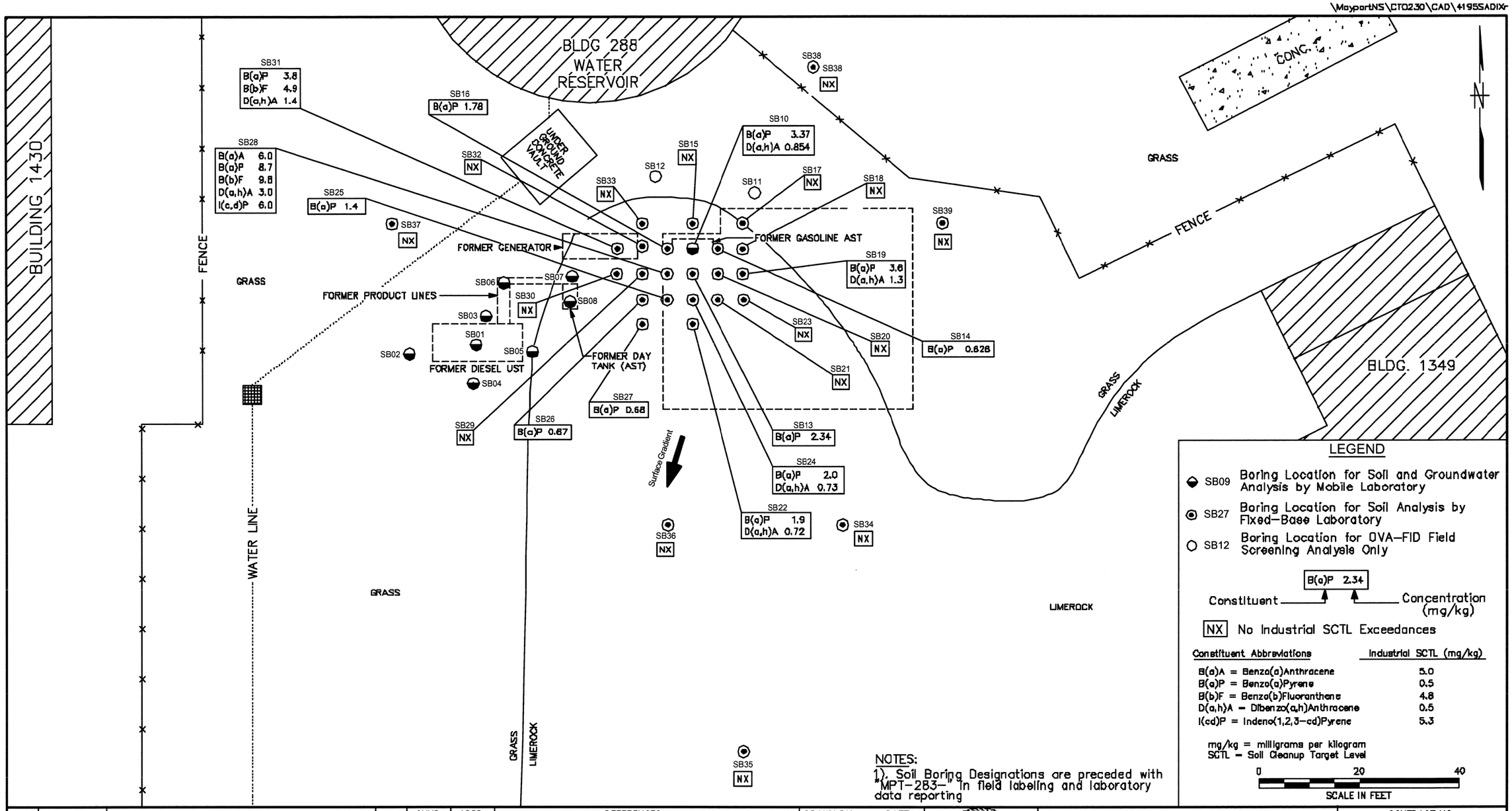

LEGEND

- SB09 — Boring Location for Soil and Groundwater Analysis by Mobile Laboratory
- SB27 — Boring Location for Soil Analysis by Fixed-Base Laboratory
- SB12 — Boring Location for OVA-FID Field Screening Analysis Only

B(a)P 2.34 — Constituent / Concentration (mg/kg)

NX — No Industrial SCTL Exceedances

Constituent Abbreviations	Industrial SCTL (mg/kg)
B(a)A = Benzo(a)Anthracene	5.0
B(a)P = Benzo(a)Pyrene	0.5
B(b)F = Benzo(b)Fluoranthene	4.8
D(a,h)A = Dibenzo(a,h)Anthracene	0.5
I(cd)P = Indeno(1,2,3-cd)Pyrene	5.3

mg/kg = milligrams per kilogram
SCTL = Soil Cleanup Target Level

0 20 40
SCALE IN FEET

NOTES:
1). Soil Boring Designations are preceded with "MPT-283-" in field labeling and laboratory data reporting

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK DATE 10/17/03
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

SOIL ANALYTICAL RESULTS EXCEEDING INDUSTRIAL SCTLs
TANK SITE 283
SITE ASSESSMENT REPORT
MAYPORT NAVAL STATION
MAYPORT, FLORIDA

CONTRACT NO. 4195
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-3 REV. 0

FORM CADD NO. SDIV_BHLDWG — REV D — 1/20/98

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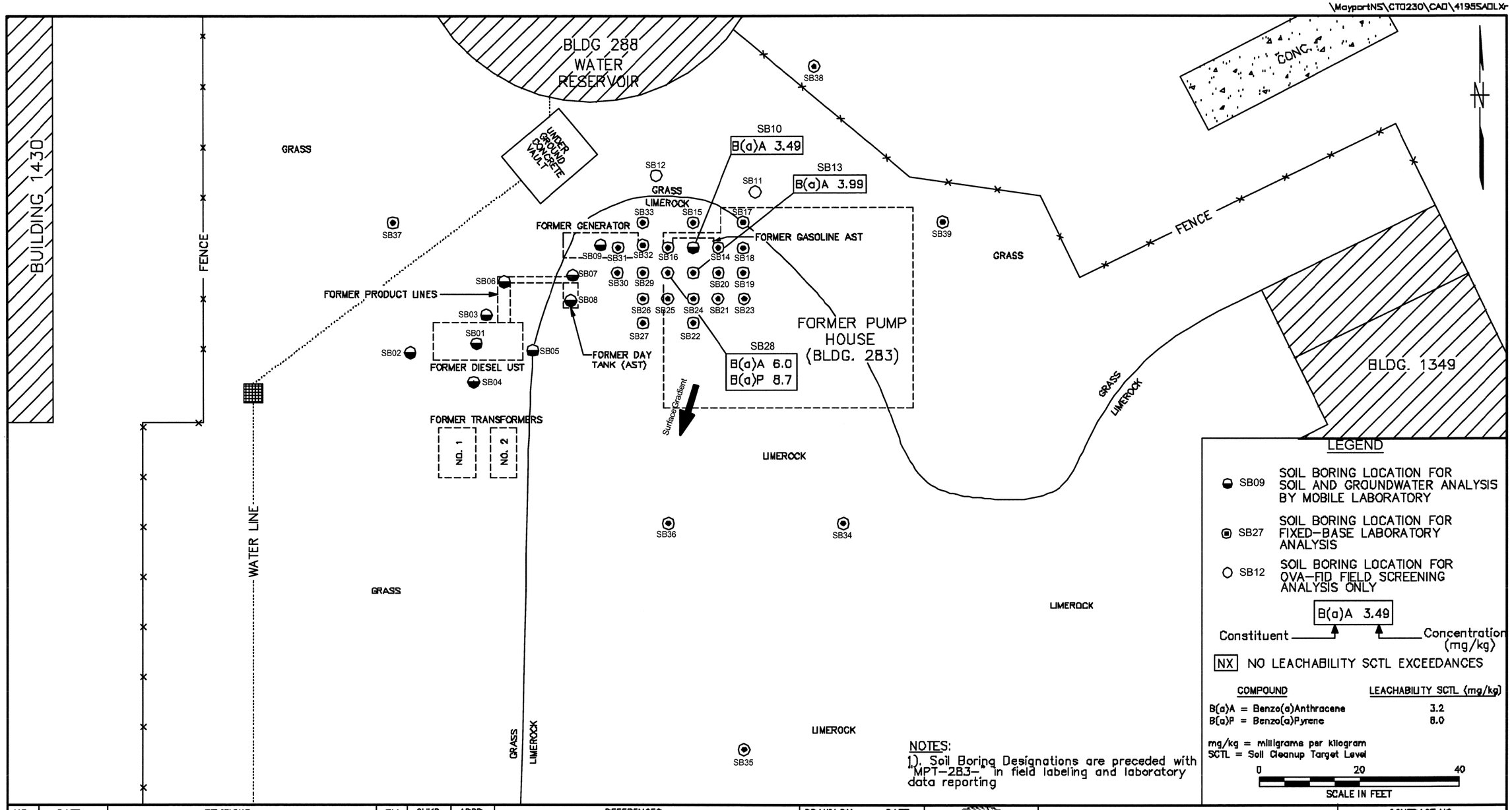

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK DATE 11/22/02
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

SOIL ANALYTICAL RESULTS EXCEEDING LEACHABILITY SCTLs
TANK SITE 283
SITE ASSESSMENT REPORT
MAYPORT NAVAL STATION
MAYPORT, FLORIDA

CONTRACT NO. 4195
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-4
REV. 0

FORM CADD NO. SDIV_BHLDWG - REV 0 - 1/20/95

3.4 GROUNDWATER ANALYTICAL RESULTS

3.4.1 Mobile Laboratory

During the mobile laboratory screening activities (July 9 and 10, 2002), groundwater samples were collected at soil borings SB-01 through SB-10 using DPT (i.e., Geoprobe) methodology. A total of 12 borings depicted on Figure 2-4 were completed during this period of time, although only 10 boring locations were screened by the mobile laboratory. Soil borings SB-11 and SB-12 were not completed to the groundwater depth. In addition to a shallow groundwater sample being collected from SB-1, two deep groundwater samples collected at 24 ft and 34 ft bls was also collected for analysis.

All samples were analyzed by an on-site mobile laboratory and the results are summarized on Table 3-5. The locations of the samples are depicted on Figure 2-1. No constituents analyzed (BETX, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene) were reported above the instrument detection limits. A complete report provided by KB Labs, Inc. is included in Appendix F.

3.4.2 Fixed-Base Laboratory

On July 30, 2002, groundwater from monitoring well MPT-283-MW-01 (formerly SB-10) was sampled. The groundwater sample was analyzed for the following GAG/KAG constituents: Pb using USEPA Method 6010, EDB using USEPA Method 504.1, PAHs using USEPA Method 8270, VOCs using USEPA Method 8260B, and petroleum range organics using FL-PRO. Based on the results, no exceedences of groundwater cleanup target levels and no petroleum constituents were reported. A summary of groundwater analytical results is presented in Table 3-6. Groundwater laboratory analytical results are provided as Appendix G.

Table 3-5
Mobile Laboratory Groundwater Results

Site Assessment Report, Tank Site 283
Naval Station Mayport
Mayport, Florida

Compound	FDEP Target Level[1]	SB-01	SB-02	SB-03	SB-04	SB-05	SB-06	SB-07
		07/09/02	07/09/02	07/09/02	07/09/02	07/09/02	07/09/02	07/09/02
	Sample Interval (ft)	4'-6'	4'-6'	4'-6'	4'-6'	4'-6'	4'-6'	4'-6'
VOCs (USEPA Method 8021B) (µg/L)								
MTBE	50	<50	<50	<50	<50	<50	<50	<50
Benzene	1	<1	<1	<1	<1	<1	<1	<1
Toluene	40	<40	<40	<40	<40	<40	<40	<40
Ethylbenzene	30	<30	<30	<30	<30	<30	<30	<30
Total Xylenes	20	<20	<20	<20	<20	<20	<20	<20
Napthalene	20	<20	<20	<20	<20	<20	<20	<20
1,Methylnapthalene	20	<20	<20	<20	<20	<20	<20	<20
2,Methylnapthalene	20	<20	<20	<20	<20	<20	<20	<20

Compound	FDEP Target Level[1]	SB-08	SB-09	SB-10	SB-11	SB-12	SB-01	SB-01
		07/09/02	07/09/02	07/09/02	07/10/02	07/10/02	07/10/02	07/10/02
	Sample Interval (ft)	4'-6'	4'-6'	3'-5'	4'-6'	4'-6'	20'-24'	30'-34'
VOCs (USEPA Method 8021B) (µg/L)								
MTBE	50	<50	<50	<50	<50	<50	<50	<50
Benzene	1	<1	<1	<1	<1	<1	<1	<1
Toluene	40	<40	<40	<40	<40	<40	<40	<40
Ethylbenzene	30	<30	<30	<30	<30	<30	<30	<30
Total Xylenes	20	<20	<20	<20	<20	<20	<20	<20
Napthalene	20	<20	<20	<20	<20	<20	<20	<20
1,Methylnapthalene	20	<20	<20	<20	<20	<20	<20	<20
2,Methylnapthalene	20	<20	<20	<20	<20	<20	<20	<20

Notes:
[1]Chapter 62-770, FAC (April 30, 1999)
µg/L = micrograms per liter

Table 3-6
Summary of Fixed-Base Laboratory Groundwater Results

Site Assessment Report, Tank Site 283
Naval Station Mayport
Mayport, Florida

Compound	FDEP Target Level[1]	MW-1
	Sample Date	07/30/02
VOCs (USEPA Method 8021B) (µg/L)		
Benzene	1	<1
Toluene	40	<1
Ethylbenzene	30	<1
Total Xylenes	20	<1
MTBE	50	<1
USEPA 504.1 (µg/L)		
EDB	0.02	<0.02
PAHs (USEPA Method 8310) (µg/L)		
Naphthalene	20	<2.2
FL-PRO (USEPA Method 8270) (mg/L)		
TRPH	5	<0.29
Metals Analysis (µg/L)		
Total Lead	15	2.7

Notes:
[1]Chapter 62-770, FAC (April 30, 1999)
Well was installed on 07/23/01.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The results of the SA and the additional site assessment activities at Tank Site 283 suggest the following:

- Headspace readings revealed no "excessively contaminated soils."
- No impacted soil was identified through the mobile laboratory analysis.
- Soil impacted with PAH constituents was identified by the fixed-base laboratory at concentrations exceeding FDEP SCTLs in the area of the former storage tanks area. The extent of hydrocarbon constituents in soil exceeding industrial SCTLs has been defined.
- No groundwater impacts were reported based on analysis by mobile laboratory or confirmed via fixed based laboratory analysis.

The detection of long chain hydrocarbons at the site combined with the lack of more volatile constituents suggests that hydrocarbons detected at the site are the result of historical releases that have subsequently undergone natural attenuation.

Based on the findings of the SAR, TtNUS recommends that a source removal be implemented for soils exceeding industrial SCTLs for PAH constituents located Tank Site 283. A source removal plan should be prepared and implemented after FDEP approval. The estimated area to be removed is at a minimum 60 ft by 40 ft by 3.5 ft in depth totaling 311 cubic yards. The impacted soil should be disposed at a State licensed disposal facility. Once the soil has been removed the monitoring well should be sampled and tested for PAH constituents. Prior to excavation, additional soil sampling should be performed to further refine the volume of soil exceeding industrial SCTLs for PAH constituents.

The Navy has determined that additional sampling is warranted prior to excavation to further refine the volume of soils exceeding industrial criteria. This information will be provided to the FDEP in form of a Source Removal Excavation Work Plan. The source removal plan will include provisions for post excavation groundwater sampling of monitoring well MPT-283-MW-01.

REFERENCES

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USDA, (United States Department of Agriculture, Soil Conservation Services), 1978. Soil Survey of City of Jacksonville Duval, County Florida.

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APPENDIX A

SAR SUMMARY SHEET

CONTAMINATION ASSESSMENT REPORT SUMMARY SHEET

Facility Name: Site 285, Naval Station Mayport Reimbursement Site: ☐

Location: Mayport, Florida State Contract Site: ☐

EDI #: _____ FAC I.D.# _____ Other: Non-Prog. ☑

Date Reviewed: _____ Local Government: _____

(1) Source of Spill: Leaking UST Date of Spill: Unknown

(2) Type of Product:

Gasoline Group	Gallons Lost	Kerosene Group	Gallons Lost
☐ Leaded		☐ Kerosene	
☐ Unleaded Regular		☑ Diesel	
☐ Unleaded Premium		☐ JP-4 Jet Fuel	
☐ Gasohol		☐ Heating Fuel	
☐ Undetermined		☐ Unknown	

(3) Description of IRA: Soil from tank excavation removed.

☐ Free product Removal: _____ (gals)
☑ Soil Removal: 311 yd^3 (cubic yds)
☐ Soil Incineration: _____ (cubic yds)

(4) Free Product still present (yes/no) No Maximum apparent product thickness: N/A (feet)

(5) Maximum Groundwater contamination levels (ppb): Total VOA: <1 benzene: <1 EDB: < 0.020
lead: _____ MTBE: <5.0 other: TRPH & PAHs

(6) Brief lithologic description: Medium to fine grained sand. No significant lithologic variations across site. Clay at 37

(7) Areal and vertical extent of soils contamination defined (yes/no) Yes

Highest current soil concentration (OVA: 8.4 ppm) or (EPA method 5030/8020: _____ ppb)

(8) Lower aquifer contaminated? (yes/no) No Depth of vertical contamination: N/A

(9) Date of last complete round of groundwater sampling: 7/10/02 Date of last soil sampling: 5/__/03

(10) QAPP approved? (yes/no) Date: 8/24/98

(11) Direction (e.g. N) of surficial groundwater flow: North (Fig. 3-1 on page _____)

(12) Average depth to groundwater: 3.5 (ft)

(13) Observed range of seasonal groundwater fluctuations: @ 1 _____ (ft) (Based on water level data collected during the CAR investigation)

(14) Estimated rate of groundwater flow: 0.007 (ft/day)

(15) Hydraulic gradient across site: 0.0005 (ft/ft)

(16) Aquifer characteristics:

	Values	Units	Method
Hydraulic conductivity	4.34	ft/day	Kasenow & Pare, 1995
Storage coefficient	-	ft/ft	-
Aquifer thickness	40	ft	Literature
Effective soil porosity	30	%	Literature
Transmissivity	10	gal/day/ft	Specific Capacity Tests

(17) Other remarks: None

APPENDIX B

TANK CLOSURE REPORT
HYDRO-TERRA, 1993

HYDRO TERRA Environmental Services, Inc.

13997 Beach Boulevard • Jacksonville, Florida 32224 • (904) 223-4042

UNDERGROUND STORAGE TANK CLOSURE ASSESSMENT REPORT

OF

BUILDING NO. 283 SITE
MAYPORT NAVAL BASE
MAYPORT, FLORIDA

Prepared for:

DAVID BOLAND, INC.
P.O. BOX 1870
TITUSVILLE, FLORIDA
32781-1870

AND

UNITED STATES NAVAL STATION
MAYPORT, FLORIDA
ENGINEERING DEPARTMENT
MAYPORT, FLORIDA 32228-0067

AND

CITY OF JACKSONVILLE
DEPARTMENT OF REGULATORY & ENVIRONMENTAL SERVICES
WATER QUALITY DIVISION-STORAGE TANK SECTION
421 WEST CHURCH STREET - SUITE 412
JACKSONVILLE, FLORIDA 32202-4111

JANUARY 10, 1993

Prepared by:

HYDRO TERRA ENVIRONMENTAL SERVICES, INC.
13997 BEACH BOULEVARD
JACKSONVILLE, FLORIDA 32224

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UNDERGROUND STORAGE TANK CLOSURE ASSESSMENT REPORT OF BUILDING NO. 283 SITE MAYPORT NAVAL BASE MAYPORT, FLORIDA

Section 1. INTRODUCTION

One 2,000-gallon underground storage tank (UST) was removed from the Building No. 283 (Pump House) located on Massey Avenue,approximately 350 feet east of Maine Street, Mayport Naval Base, Duval County, Florida (Figure 1). The UST was used to store and dispense diesel fuel for an on-site generator. The UST was located approximately 110 feet north of Massey Avenue and 25 feet west of the pump house (Figure 2). The following paragraphs summarize the field activities and test results of the UST removal and closure assessment.

Section 2. WORK PERFORMED

Tank Removal Activities - On December 23, 1992 one 2,000-gallon diesel UST was removed from the site. The tank removal activities were conducted in accordance with DER's Chapter 17-761 Florida Administrative Code (FAC) by Hydro Terra Environmental, Inc. (HTE), a state certified pollutant storage contractor (PSCC # 050718). The liquid contents were removed from the UST prior to its removal. A copy of the manifest documenting the liquid disposal is attached in Section 5.

Following the UST removal, a visual inspection of the UST revealed some evidence of corrosion, but no pitholes or cracks, or evidence of a discharge was observed. The UST was subsequently cleaned, degassed, and transported off site for proper disposal. A copy of the disposal ticket for the UST, and the Tank Removal Form - DER 17-761.900(5) are attached in Section 5.

Environmental Monitoring Activities - During the tank removal activities, eight samples (A through H) were collected from the excavated soils. In addition, seven soil samples (3 through 7) were collected from the bottom and walls of the open tank pit, and along the underground product line (samples 1 and 2) between the generator's day tank and the UST. Product line samples were collected every twenty feet of pipe. Approximate soil sample locations and cross-sections of the tank pit area are shown in Figure 3 (see Section 3).

Each soil sample was placed in a half-filled 16-ounce mason jar which was sealed with aluminum foil. In accordance with DER's Chapter 17-770.200 Florida Administrative Code (FAC) "Petroleum Contamination Cleanup Criteria", all samples were field analyzed for petroleum hydrocarbon vapors using a Foxboro Century 128GC - Organic Vapor Analyzer (OVA) equipped with a flame ionization detector. In addition to screening the samples with the standard (unfiltered) OVA probe, a probe equipped with an activated charcoal filter was used to screen for naturally occurring vapors (e.g., methane). The water table was encountered at a depth of approximately 5.0 feet below land surface (bls) during the tank removal activities.

OVA screening results for samples collected from the excavated soils indicated the presence of no "excessively" contaminated soils at the site. However, OVA results did indicate the presence of moderate levels of petroleum hydrocarbon vapors in five of the eight samples collected during the excavating. OVA readings ranged from 2 parts per million (ppm) to 25 ppm. According to DER's Chapter 17-770.200(2) FAC, soil samples that exhibit OVA readings greater than 50 ppm for soils contaminated by "Kerosene (diesel or mixed fuel) Analytical Group" compounds are considered "excessively" contaminated.

Soils with OVA readings less than 50 ppm are considered contaminated but not "excessively". Four of the five soil samples collected from the bottom and walls of the open tank pit indicated the presence of petroleum hydrocarbon vapors, two of which indicated the presence of "excessively" contaminated soils. However, these two samples were collected at depths below the top of the water table. No hydrocarbon vapors were detected in the two samples collected along the product line. OVA results for all of the soil samples are listed in Table 1.

Following the removal of the UST and the monitoring activities, the excavated soils along with clean soil were placed back into the excavation. After the excavation was backfilled, a water sample was collected from a temporary well point (GW-1) that was installed in the tank pit area. The groundwater sample was subsequently analyzed for "Kerosene Analytical Group" compounds by EPA Method 602 (including MTBE) and Method 610.

Analytical results for sample GW-1 indicated the presence of EPA Method 610 compounds at levels above the current cleanup target levels established in DER's Chapter 17-770 FAC Petroleum Contamination Cleanup Criteria. No EPA Method 602 compounds were detected above the method detection limits. A copy of the laboratory report is attached in Section 4.

A copy of Closure Assessment Form, DER 17-761.900(6) is attached in Section 5.

Section 3. ILLUSTRATIONS

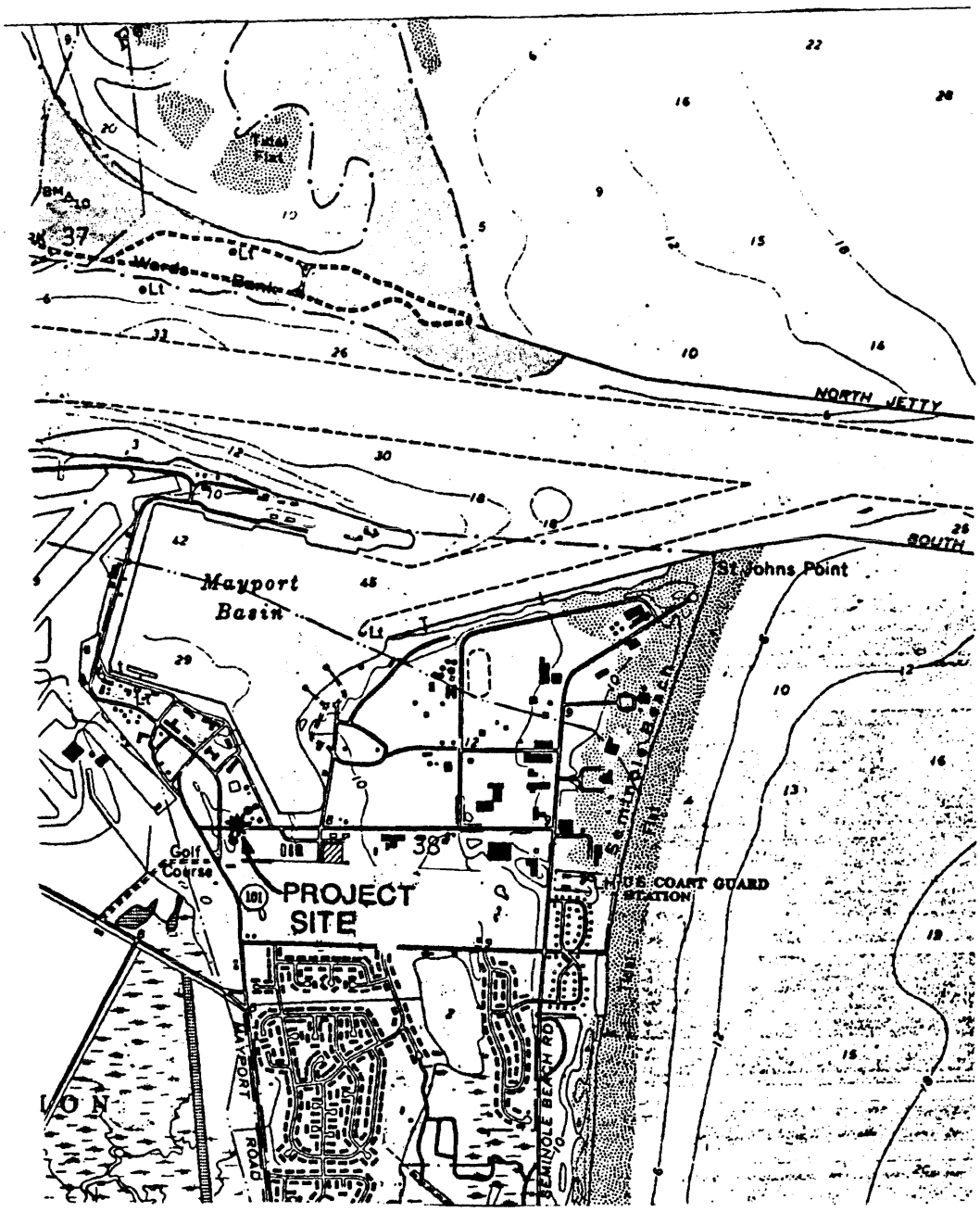


FIGURE 1. SITE LOCATION AND TOPOGRAPHIC MAP

MAYPORT NAVAL BASE MAYPORT, FLORIDA		Project No. Date Drawing No.

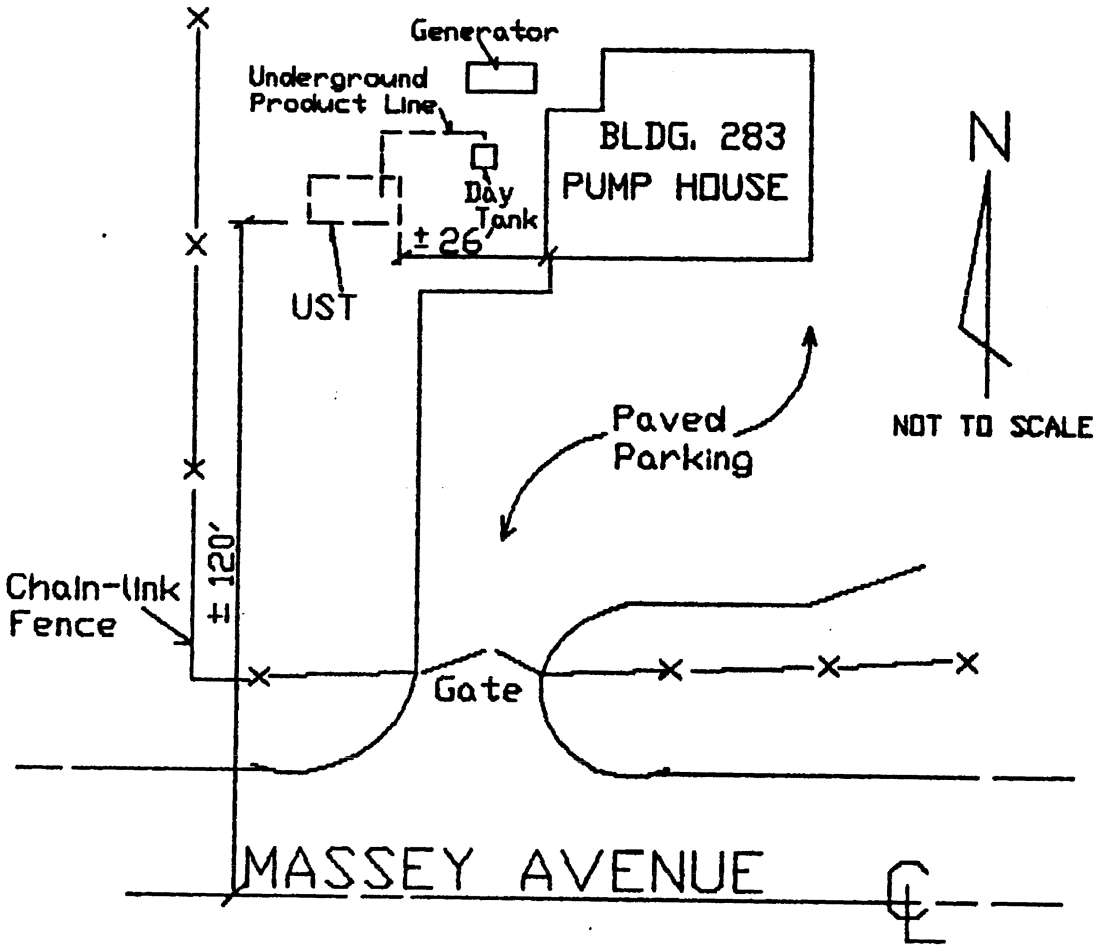
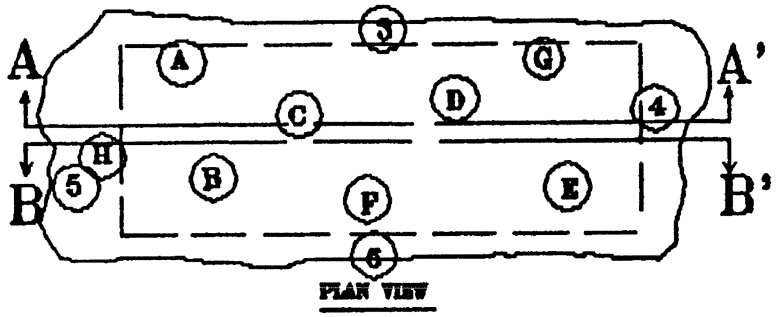
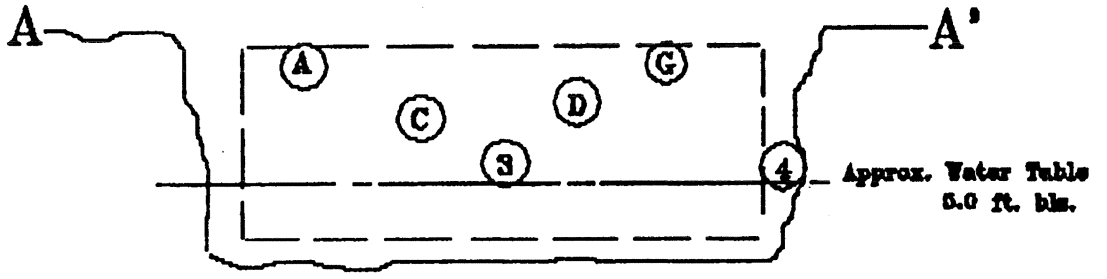


FIGURE 2. Facility Site Base Map



PLAN VIEW



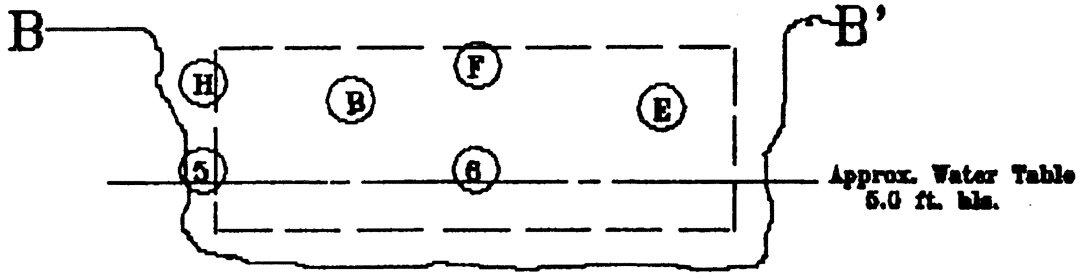


Figure 3. Soil Sample Locations for OVA/FID Measurements

Table 1. Results of the OVA/FID Soil Screening.

SAMPLE LOCATION/ID	OVA - STANDARD PROBE (ppm)	OVA - ACF PROBE (ppm)	ACTUAL OVA READING (ppm)
Excavated Soils:			
A	0	0	0
B	0	0	0
C	0	0	0
D	110	85	25
E	50	35	15
F	5	2	3
G	38	25	13
H	2	0	2
Product Line:			
1	0	0	0
2	3	3	0
Open UST Pit:			
3	0	0	0
4	380	235	145
5	370	245	125
6	6	4	2
7	15	10	5

ft = feet
ppm = parts per million
OVA = organic vapor analyzer
ACF = activated charcoal filter

Section 4. LABORATORY REPORTS AND RECORDS

Environmental Conservation Laboratories
4810 Executive Park Ct., Ste. 211
Jacksonville, Florida 32216-6069
904 / 296-3007
Fax 904 / 296-6210

ENCO
Laboratories
DHRS Certification No. E82277

CLIENT : Southeastern Environmental Audits, Inc.
ADDRESS: 8711 Perimeter Park Blvd. Suite 11 Jacksonville, FL 32216

ATTENTION: Randy Pfahler

REPORT # :JX2666
DATE SAMPLED :December 23, 1992
DATE SUBMITTED:December 23, 1992
DATE REPORTED :December 31, 1992

SAMPLE IDENTIFICATION

Aqueous samples submitted and identified by CLIENT as:

AUD-353.11

GW-1 (12/23/92)

LABORATORY MANAGER

Mark E. Inman for
Charles M. Ged

ENCO LABORATORIES
REPORT # :JX2666
DATE REPORTED: December 31, 1992
REFERENCE :AUD-353.11

RESULTS OF ANALYSIS

EPA METHOD 602 - VOLATILE AROMATICS	GW-1	LAB BLANK	UNITS
Methyl-t-butyl Ether	ND(1)	ND(1)	ug/L
Benzene	ND(1)	ND(1)	ug/L
Toluene	ND(1)	ND(1)	ug/L
Ethylbenzene	ND(1)	ND(1)	ug/L
Total Xylenes	ND(1)	ND(1)	ug/L
Chlorobenzene	ND(1)	ND(1)	ug/L
1,2-Dichlorobenzene	ND(1)	ND(1)	ug/L
1,3-Dichlorobenzene	ND(1)	ND(1)	ug/L
1,4-Dichlorobenzene	ND(1)	ND(1)	ug/L
rogate:	% REC	% REC	LIMITS
Bromofluorobenzene	90	94	70-123
Date Analyzed	12/30/92	12/30/92	

= None Detected to level in parentheses

RESULTS OF ANALYSIS

EPA METHOD 610 - POLY AROMATIC HYDROCARBONS	GW-1*	LAB BLANK	UNITS
Acenaphthene	ND(100)	ND(10)	ug/L
Acenaphthylene	ND(100)	ND(10)	ug/L
Anthracene	ND(100)	ND(10)	ug/L
Benzo (a) anthracene	ND(100)	ND(10)	ug/L
Benzo (b) pyrene	ND(100)	ND(10)	ug/L
Benzo (b) fluoranthene	ND(100)	ND(10)	ug/L
Benzo (g,h,i) perylene	ND(100)	ND(10)	ug/L
Benzo (k) fluoranthene	ND(100)	ND(10)	ug/L
Chrysene	ND(100)	ND(10)	ug/L
Dibenzo (ah) anthracene	ND(100)	ND(10)	ug/L
.oranthene	ND(100)	ND(10)	ug/L
Fluorene	ND(100)	ND(10)	ug/L
Indeno (123-cd) pyrene	ND(100)	ND(10)	ug/L
1-Methyl naphthalene	ND(100)	ND(10)	ug/L
2-Methyl naphthalene	ND(100)	ND(10)	ug/L
Naphthalene	ND(100)	ND(10)	ug/L
Phenanthrene	ND(100)	ND(10)	ug/L
Pyrene	ND(100)	ND(10)	ug/L
Surrogate:	**% REC**	**% REC**	**LIMITS**
2-Fluorobiphenyl	110	113	30-117
Date Extracted	12/29/92	12/29/92	
Date Analyzed	12/30/92	12/30/92	

* = Higher detection limit due to matrix interference
. = None Detected to level in parentheses

ENCO LABORATORIES
REPORT # :JX2666
DATE REPORTED:December 31, 1992
REFERENCE :AUD-353.11

QUALITY CONTROL DATA

PARAMETER	% RECOVERY MS/MSD/LCS	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 602				
Benzene	100/100/120	50-131	<1	17
Toluene	98/94/98	56-132	4	14
Ethylbenzene	106/104/106	54-127	2	18
Total Xylene	108/103/114	49-147	5	14
EPA Method 610				
2-Methylnaphthalene	112/109/98	31-126	3	46
Acenaphthene	107/104/93	28-125	3	40
Phenanthrene	113/113/86	35-143	<1	29
Chrysene	84/107/64	14-158	24	42
Benzo(k)pyrene	108/101/94	23-156	7	47

MS = Matrix Spike
MSD = Matrix Spike Duplicate
LCS = Laboratory Control Standard
RPD = Relative Percent Difference
< = Less Than

JX266

SEA, INC.

SOUTHEASTERN ENVIRONMENTAL AUDITS, INC.
9124 CYPRESS GREEN DRIVE
JACKSONVILLE, FLORIDA 32256

CHAIN OF CUSTODY RECORD

PAGE ____ OF ____

PROJECT NO.

PROJECT NAME: AUD-353.11

SAMPLERS (Signature): Randy Fiddler

STATION NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	602	610									REMARKS
GW-1	12/23			X	tankpit	3	X	X									

RELINQUISHED BY:	DATE / TIME	RECEIVED BY:	METHOD OF SHIPMENT:	REMARKS:
Randy Fiddler	12/23	Carrie Driver		
RELINQUISHED BY: Carrie Driver	DATE / TIME	RECEIVED BY:	RECEIVED FOR LABORATORY BY: 1500 T. Weathers 12/23/92	

Section 5. FDER FORMS & MANIFESTS

Florida Department of Environmental Regulation
Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

DER Form # 17-761.900(1)
Form Title Discharge Reporting Form
Effective Date December 10, 1990
DER Application No. _____ (Filled in by DER)

Discharge Reporting Form

Use this form to notify the Department of Environmental Regulation of:

1. Results of tank tightness testing that exceed allowable tolerances within ten days of receipt of test result.
2. Petroleum discharges exceeding 25 gallons on pervious surfaces as described in Section 17-761.460 F.A.C. within one working day of discovery.
3. Hazardous substance (CERCLA regulated), discharges exceeding applicable reportable quantities established in 17-761.460(2) F.A.C., within one working day of the discovery.
4. Within one working day of discovery of suspected releases confirmed by: (a) released regulated substances or pollutants discovered in the surrounding area, (b) unusual and unexplained storage system operating conditions, (c) monitoring results from a leak detection method or from a tank closure assessment that indicate a release may have occurred, or (d) manual tank gauging results for tanks of 550 gallons or less, exceeding ten gallons per weekly test or five gallons averaged over four consecutive weekly tests.

Mail to the DER District Office in your area listed on the reverse side of this form

PLEASE PRINT OR TYPE
Complete all applicable blanks

1. DER Facility ID Number: _____ 2. Tank Number: 1 3. Date: 12-30-92
4. Facility Name: Pump House at Water System Storage
   Facility Owner or Operator: NAS Mayport
   Facility Address: Bldg 283 (demolished) Mayport, Florida
   Telephone Number: (_____) _____ County: Duval
   Mailing Address: ROIC P.O. Box 5 NAS Jacksonville, Florida 32212-0005
5. Date of receipt of test results or discovery: 12-31-92 month/day/year
6. Method of initial discovery. (circle one **only**)
   A. Liquid detector (automatic or manual)
   B. Vapor detector (automatic or manual)
   C. Tightness test (underground tanks only).
   D. Emptying and Inspection.
   E. Inventory control.
   F. Vapor or visible signs of a discharge in the vicinity.
   G. Closure: OVA - LAB RESULTS (explain)
   H. Other: _____
7. Estimated number of gallons discharged: Unk
8. What part of storage system has leaked? (circle all that apply) A. Dispenser B. Pipe C. Fitting D. Tank (E.) Unknown
9. Type of regulated substance discharged. (circle one)
   A. leaded gasoline
   B. unleaded gasoline
   C. gasohol
   D. vehicular diesel
   F. aviation gas
   G. jet fuel
   L. used/waste oil
   (M) diesel
   O. new/lube oil
   V. hazardous substance includes pesticides, ammonia, chlorine and derivatives (write in name or Chemical Abstract Service CAS number) _____
   Z. other (write in name) _____
10. Cause of leak. (circle all that apply)
    (A.) Unknown
    B. Split
    C. Loose connection
    D. Corrosion
    E. Puncture
    F. Installation failure
    G. Spill _____
    H. Overfill
    I. Other (specify) _____
11. Type of financial responsibility. (circle one)
    A. Third party insurance provided by the state insurance contractor
    B. Self-insurance pursuant to Chapter 17-769.500 F.A.C.
    C. Not applicable
    D. None
    E. FED GOVT.

To the best of my knowledge and belief all information submitted on this form is true, accurate, and complete.

Edward A. Smith-Hydro Terra ESI
Printed Name of Owner, Operator or Authorized Representative

Edward A. Smith
Signature of Owner, Operator or Authorized Representative

Florida Department of Environmental Regulation
Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

DER Form # 17-761.900(2)
Form Title Storage Tank Registration Form
Effective Date December 10, 1990
DER Application No. _____ (Filled in by DER)

Storage Tank Registration Form

Please Print or Type - Review Instructions Before Completing Form

1. DER Facility ID Number: _____ 2. Facility Type: F

3. New Registration ☐ New Owner Data ☐ Facility Revision ☒ Tank(s) Revision ☐

4. County and Code of tank(s) location: 16 Duval / _____

5. Facility Name: Pump House at Water System Storage
Tank(s) Address: Bldg 283 Massey Ave. (demolished) Mayport, Fla.
City/State/Zip: Mayport, Florida
Contact Person: _____ Telephone: (____) _____

6. Financial Responsibility Type: _____

7a. Tank(s) Owner: Department of the Navy
Owner Mailing Address: ROIC P.O. Box 5
City/State/Zip: NAS Jacksonville, Florida 32212-0005
Contact Person: _____ Telephone: (____) _____

7b. New Owner Signature/Change Date: _____ / ____/____/____

8. Location (optional) Latitude: ___°___'___" Longitude: ___°___'___" Section____ Township____ Range____

Complete One Line For Each Tank At This Facility (Use Codes - See Instructions)

Complete 9 - 16 for tanks in use; 9 - 19 for tanks out of use

9	10	11	12	13	14	15	16	17	18	19
1	2000	G	Unk	U	C	B	M	B	0	12-92
2	300	B-G	Unk	A	C	B	M	B	0	12-92

20. Hydro Terra Environmental Services
Certified Contractor*

DPR# PCC 050718
Department of Professional Regulation License Number*

*For new tank installation or tank removal

To the best of my knowledge and belief all information submitted on this form is true, accurate and complete.

Edward A. Smith
Print name & title of owner or authorized person

Edward A. Smith
Signature

12-30-92
Date

Northwest District
160 Governmental Center
Pensacola, Florida 32501-5794
904-436-8300

Northeast District
7825 Baymeadows Way, Suite B 200
Jacksonville, Florida 32207
904-798-4200

Central District
3319 Maguire Blvd Suite 232
Orlando, Florida 32803-3767
407-894-7555

Southwest District
4520 Oak Fair Blvd
Tampa, Florida 33610-7347
813-623-5561

South District
2269 Bay St
Fort Myers, Florida 33901-2896
813-332 6975

Southeast District
1900 S Congress Ave Suite A
West Palm Beach Florida 33406
407-433-2650

Florida Department of Environmental Regulation
Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

DER Form # 17-761.900(8)
Form Title Closure Assessment Form
Effective Date December 10, 1990
DER Application No. _____ (Filled in by DER)

Closure Assessment Form

Owners of storage tank systems that are replacing, removing or closing in place storage tanks shall use this form to demonstrate that a storage system closure assesment was performed in accordance with Rule 17-761 or 17-762, Florida Administrative Code. Eligible Early Detection Incentive (EDI) and Reimbursement Program sites do not have to perform a closure assessment.

Please Print or Type
Complete All Applicable Blanks

1. Date: 12-30-92
2. DER Facility ID Number: _____ 3. County: Duval
4. Facility Name: Pump House at Water System Storage
5. Facility Owner: United States Government
6. Facility Address: Bldg 283 Massey Ave. (demolished) Mayport, Florida
7. Mailing Address: ROIC P.O. Box 5 NAS Jacksonville, Fla 32212-0005
8. Telephone Number: (____) _____ 9. Facility Operator: Mayport NAS
10. Are the Storage Tank(s): **(Circle one or both)** (A.) Aboveground or (B.) Underground
11. Type of Product(s) Stored: Diesel & Gasoline
12. Were the Tank(s): **(Circle one)** A. Replaced (B.) Removed C. Closed in Place D. Upgraded (aboveground tanks only)
13. Number of Tanks Closed: 2 14. Age of Tanks: Unk

Facility Assessment Information

Yes	No	Not Applicable	
☐	☐		1. Is the facility participating in the Florida Petroleum Liability Insurance and Restoration Program (FPLIRP)?
XX	☐		2. Was a Discharge Reporting Form submitted to the Department? If yes, When: _____ Where: _____
XX	☐		3. Is the depth to ground water less than 20 feet?
☐	XX	☐	4. Are monitoring wells present around the storage system? If yes, specify type: ☐ Water monitoring ☐ Vapor monitoring
☐	XX	☐	5. Is there free product present in the monitoring wells or within the excavation?
☐	XX	☐	6. Were the petroleum hydrocarbon vapor levels in the soils greater than 500 parts per million for gasoline? Specify sample type: ☐ Vapor Monitoring wells ☐ Soil sample(s)
XX	☐	☐	7. Were the petroleum hydrocarbon vapor levels in the soils greater than 50 parts per million for diesel/kerosene? Specify sample type: ☐ Vapor Monitoring wells ☐ Soil sample(s)
XX	☐	☐	8. Were the analytical laboratory results of the ground water sample(s) greater than the allowable state target levels? (See target levels on reverse side of this form and supply laboratory data sheets)
☐	☐	XX	9. If a used oil storage system, did a visual inspection detect any discolored soil indicating a release?
☐	☐	Unk	10. Are any potable wells located within ¼ of a mile radius of the facility?
☐	☐		11. Is there a surface water body within ¼ mile radius of the site? If yes, indicate distance: 1/4 mi.

Northwest District
160 Governmental Center
Pensacola, Florida 32501-5794
904-436-8300

Northeast District
7825 Baymeadows Way, Suite B 200
Jacksonville, Florida 32207
904-798-4200

Central District
3319 Maguire Blvd. Suite 232
Orlando, Florida 32803-3767
407-894-7555

Southwest District
4520 Oak Fair Blvd.
Tampa, Florida 33610-7347
813-623-5561

South District
2269 Bay St.
Fort Myers, Florida 33901-2696
813-332-6975

Southeast District
1900 S. Congress Ave., Suite A
West Palm Beach, Florida 33406
407-433-2650

Florida Department of Environmental Regulation
Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

DER Form # 17-761.900(5)
Form Title Underground Storage Tank Installation & Removal Form for Certified Contractors
Effective Date December 10, 1990
DER Application No. _____ (Filled in by DER)

Underground Storage Tank Installation and Removal Form For Certified Contractors

Pollutant Storage System Specialty Contractors as defined in Section 489.113, Florida Statutes (Certified contractors as defined in Section 17-761.200, Florida Administrative Code) shall use this form to certify that the installation, replacement or removal of the storage tank system(s) located at the address listed below was performed in accordance with Department Reference Standards.

General Facility Information

1. DER Facility Identification No.: _____
2. Facility Name: Pump House at Water System Storage Telephone: (____) _____
3. Street Address (physical location): Bldg 283 Massey Ave (demolished) Mayport, Fla
4. Owner Name: Department of the Navy Telephone: (____) _____
5. Owner Address: ROIC P.O. Box 5 NAS Jacksonville, Florida 32212-0005
6. Number of Tanks: a. Installed at this time 0 b. Removed at this time 2
7. Tank(s) Manufactured by: Unk
8. Date Work Initiated: 12-23-92 9. Date Work Completed: 12-23-92

Underground Pollutant Tank Installation Checklist

Please certify the completion of the following installation requirements by placing an (X) in the appropriate box.

1. The tanks and piping are corrosion resistant and approved for use by State and Federal Laws. ☐
2. Excavation, backfill and compaction completed in accordance with NFPA (National Fire Protection Association) 30(87), API (American Petroleum Institute) 1615, PEI (Petroleum Equipment Institute) RP100-87 and the manufacturers' specifications. ☐
3. Tanks and piping pretested and installed in accordance with NFPA 30(87), API 1615, PEI/RP100(87) and the manufacturers' specifications. ☐
4. Steel tanks and piping are cathodically protected in accordance with NFPA 30(87), API 1632, UL (Underwriters Laboratory) 1746, STI (Steel Tank Institute) R892-89 and the manufacturer's specifications. ☐
5. Tanks and piping tested for tightness after installation in accordance with NFPA 30(87) and PEI/RP100-87. ☐
6. Monitoring well(s) or other leak detection devices installed and tested in accordance with Section 17-761.640, Florida Administrative Code (F.A.C.) ☐
7. Spill and overfill protection devices installed in accordance with Section 17-761.500, F.A.C. ☐
8. Secondary containment installed for tanks and piping as applicable in accordance with Section 17-761.500, F.A.C. ☐

Please Note: The numbers following the abbreviations (e.g. API 1615) are publication or specification numbers issued by these instututions.

Underground Pollutant Tank Removal Checklist

1. Closure assessment performed in accordance with Section 17-761.800, F.A.C. ☒
2. Underground tank removed and disposed of as specified in API 1604 in acordance with Section 17-761.800, F.A.C. ☒

Northwest District 160 Governmental Center Pensacola, Florida 32501-5794 904-436-8300
Northeast District 7825 Baymeadows Way, Suite B 200 Jacksonville, Florida 32207 904-798-4200
Central District 3319 Maguire Blvd. Suite 232 Orlando, Florida 32803 3767 407-894-7555
Southwest District 4520 Oak Fair Blvd. Tampa, Florida 33610-7347 813-623-5561
South District 2269 Bay St. Fort Myers, Florida 33901-2896 813-332-6975
Southeast District 1900 S. Congress Ave. Suite A West Palm Beach, Florida 33406 407-433-2650

HYDRO TERRA Environmental Services, Inc.

13997 Beach Boulevard • Jacksonville, Florida 32224 • (904) 223-4042

December 30, 1992

TANK DISPOSAL CERTIFICATE

This is to certify that one 2,000 gallon underground storage tank (5.333' dia. X 12' length), and one 300 gallon storage tank (3.083' dia. X 5.833' length) removed on 12-23-92 from Mayport Naval Station Building 283 on Massey Avenue Mayport, Florida, were degassed, decommissioned, cleaned, cut up and transported to Chatham Iron & Metal Company in Jacksonville, Florida for disposal as scrap steel. Visual inspection of these tanks revealed no apparent defects in tank integrety.

Certified By
HYDRO TERRA ESI

Edward A. Smith
Vice President

WASTE MANIFEST

NOT NEGOTIABLE

№ 3055

INDEPENDENT WASTE OIL, INC.

2146 BoPeep Court
Jacksonville, Fl 32210
Bus: 781-8903

Change To.

LICENSED COLLECTOR, STORER & TRANSPORTER

FLORIDA D.E.R. REGULATION #50022-UO

IDENTIFICATION

Hydra Terra — DATE SHIPPED 12-23-92
GENERATOR/SHIPPER

13497 Beach Blvd — TIME
ADDRESS

CITY — STATE — ZIP — PHONE

WASTE INFORMATION

NON HAZARDOUS WASTE		EPA HAZ. WASTE ID#	DESCRIPTION AND CLASSIFICATION (Proper Shipping Name, Class and ID# per 172.101, 172.202, 172.203	UN# or NA#	EXEMPTION OR NO LABELS REQ'D	FLASH POINT (IN°C) WHEN REQ'D
YES	~~X~~		Used Oil, Tank Bottom, Combustible Liquid	1993		> 60°
NO			Waste Used Fuel			

SPECIAL HANDLING INSTRUCTIONS
PICKED UP @ NAS MAYPORT - BOLAND PROJECT

CERTIFICATION
This is to certify under penalty of law that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the U.S. Environmental Protection Agency.

12-23-92
GENERATOR'S SIGNATURE — DATE

TRANSPORTER #1 SIGNATURE & DATE — TRANSPORTER #2 SIGNATURE & DATE (if required)

12-23-92
TSDF SIGNATURE — DATE

NET GALLONS 1 Euc

NET BALANCE 1 Euc

PRICE PER GALLON

NET DOLLARS

☐ CASH ☒ ~~CHARGE~~

MANIFEST DOCUMENT NO.

12/29

Cheryl FYI

5090
Ser N4E/5452
31 Dec 92

Water Quality Division
Regulatory & Environmental Services
City of Jacksonville
421 West Church Street, Suite 412
Jacksonville, FL 32202-4111

Subj: DISCHARGE NOTIFICATION
FDER FACILITY 168626008

Gentlemen:

The enclosed Discharge Reporting Form is submitted for petroleum contamination discovered during removal of a 2,000 gallon underground diesel tank located at Building 283, Potable Water Treatment Plant. This site will be included in the Petroleum Contamination Agreement of October 1990, and a contamination assessment report and a remedial action plan will be performed.

If you have any questions, please contact Ms. Cheryl Mitchell or Mr. Michael Davenport, N4E, at 904-270-6730.

Sincerely,

CHRIS A. TAYLOR
Commander, CEC, U.S. Navy
Staff Civil Engineer
By direction of the
Commanding Officer

Encl:
(1) FDER Form 17-761.900(1)

Copy to:
SOUTHNAVFACENGCOM (Code 18237)
FDER Tallahassee (Mr. Eric Nuzie)

bc: N4E Chron

c:\wpdocs\DischNot.283/pl/12-23

12/29

Cheryl FYI

5090
Ser N4E/5452
31 Dec 92

Water Quality Division
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If you have any questions, please contact Ms. Cheryl Mitchell or Mr. Michael Davenport, N4E, at 904-270-6730.

Sincerely,

CHRIS A. TAYLOR
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SOUTHNAVFACENGCOM (Code 18237)
FDER Tallahassee (Mr. Eric Nuzie)

bc: N4E Chron

c:\wpdocs\DischNot.283/pl/12-23

APPENDIX C
SOIL BORING LOG

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 230 / Tank Site 283
PROJECT NUMBER: N4195
DRILLING COMPANY: Preferred Drilling Solutions, Inc.
DRILLING RIG: DPT
BORING NUMBER: SB-1
DATE: 07.09.02
SCIENTIST: David Siefken
DRILLER: Tim Colvard

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-8"						grass and organic material						
							loose gray and white, fine, silty,sand. - with shell hash						
							becoming more compact at water table (3.5 ft bls)						
	16'						compact gray and white, fine, silty,						
							sand. - with a trace of shell hash						
	24'						tightly packed, gray, very fine, sand. -						
							- with shell hash						
	32'						tighly packed, gray to greenish gray, fine, sand.-						
							trace of shell hash						
	34'						tightly packed, greenish gray, very fine, sand.-						
							end at boring 34 ft bls.						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response read.

Drilling Area Background (ppm): ____

Remarks: _____

Converted to Well: Yes _____ No _____ Well I.D. #: _____

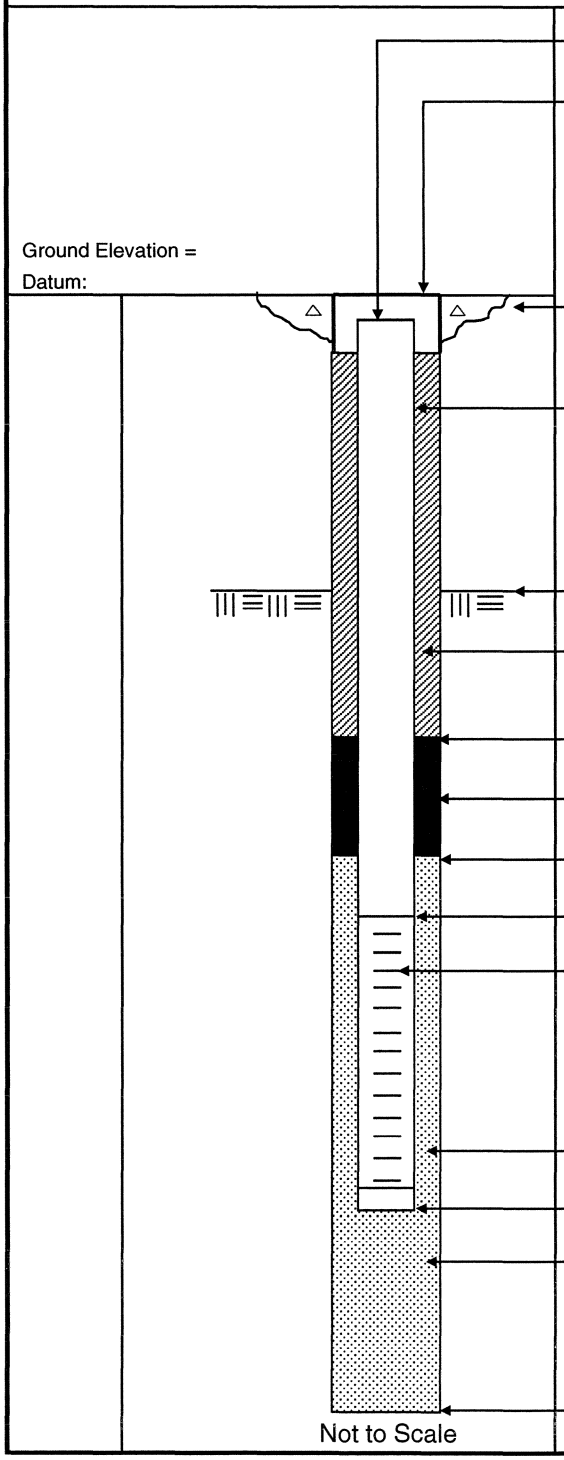
APPENDIX D
WELL COMPLETION LOG

Tetra Tech NUS, Inc.

WELL No.: MPT-283-MW1

MONITORING WELL SHEET

PROJECT:	NS MPT	DRILLING Co.:	Preferred	BORING No.:	MW-1
PROJECT No.:	N4195	DRILLER:	Tim Colvard	DATE COMPLETED:	7.23.02
SITE:	Bld 283	DRILLING METHOD:	HS	NORTHING:	
GEOLOGIST:		DEV. METHOD:	Cent. Pump	EASTING:	



Elevation / Depth of Top of Riser: NA /

Elevation / Height of Top of Surface Casing: NA /

I.D. of Surface Casing: 8"

Type of Surface Casing: Steel

Type of Surface Seal: Quikreet

I.D. of Riser: 2"

Type of Riser: PVC

Borehole Diameter: 8"

Elevation / Depth Top of Rock: /

Type of Backfill: Type 1 Portland Grout

Elevation / Depth of Seal: / 0.5'

Type of Seal: 30/65 Sand

Elevation / Depth of Top of Filter Pack: / 1.5'

Elevation / Depth of Top of Screen: / 3'

Type of Screen: PVC

Slot Size x Length: 0.01 inch

I.D. of Screen: 2"

Type of Filter Pack: 20/30

Elevation / Depth of Bottom of Screen: / 13'

Elevation / Depth of Bottom of Filter Pack: / 13.5'

Type of Backfill Below Well:

Elevation / Total Depth of Borehole: / 13.5'

APPENDIX E
FIELD FORMS

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: CTO 230
Project No.: N4195

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: MPT-283-MW 1S-01
Sample Location: MW-1
Sampled By: DS
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 7-30-02 / Time: 1315	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	~~Salinity~~ ORP	Other
Method: Low Flow Peristaltic	CL	7.78	0.513	25.10	4.2	0.48	-183	

PURGE DATA

Date: 7.30.02	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2								
Well Casing Material: PVC								
Total Well Depth (TD): 12.7				SEE	DATA	SHEETS		
Static Water Level (WL): 4.32								
One Casing Volume(gal/L): 5.6								
Start Purge (hrs): 12:30								
End Purge (hrs):								
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260B VOH & VOC	HCL	(3) 40 ml vials	D3
EDB 504.1	none	3) 40 ml vials	
PAH 8310	none	(2) 1 L	
TRPH FL- PRO	H2SO4	(2) 1 L	
Lead (total)	HNO3	(1) 500 ml	

OBSERVATIONS / NOTES

EQUIP BLANK 1520 TAKEN

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: CTO 230 WELL ID.: MPT 283-MW-01-01
PROJECT NUMBER: N4195 DATE: 7/30/2002

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1230	4.32	500							
1240	4.34	500	7.81	0.514	5.0	0.62	24.88	-192	
1250	4.34	500	7.82	0.513	4.2	0.49	25.17	-182	
1255	4.34	500	7.79	0.512	3.1	0.44	25.11	-176	
1300	4.34	500	7.78	0.515	4.2	0.48	25.10	-183	
1315	SAMPLE								

SIGNATURE(S):

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: CTO 230 **Project No.:** N4195
Location: Bld 283, Mayport **Personnel:** DS
Weather Conditions: **Measuring Device:** Dipper-T
Tidally Influenced: Yes _X__ No ___ **Remarks:** ←

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
MW-1	7/30/	1217		12.7	4.32	—		Good well

* All measurements to the nearest 0.01 foot

DN4195: 4.4:01

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

2002

Project Name: BLD 283 ~~Site Assessment Tank Site Area A&E~~ **Project No.:** ~~N4049~~ 4195

Location: NAS ~~JAX~~ MAYPORT **Personnel:** DS & MD

Weather Conditions: Clear **Measuring Device:** Tetus H_2O Probe

Tidally Influenced: (Yes X) No ~~X~~ **Remarks:**

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
P1	7/9/02	1623		6	4.83			MIDDLE TIDE
P2	7/9	1625		6	4.08			
P3	7/9	1629		6	3.36			
P4	7/9	1627		6	4.02			
P1	7/10	0930			4.84			LOW TIDE
P2	7/10	0932			4.09			
P3	7/10	0935			3.37			
P4	7/10	0934			4.03			
P1	7/10	1506			4.86			HIGH TIDE
P2	7/10	1507			4.11			
P3	7/10	1509			3.39			
P4	7/10	1508			4.05			

7/9

7/10

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: 283-MW1 Depth to Bottom (ft.): 12.7 Responsible Personnel: DAVID SIEFKEN
Site: BLD 283 Static Water Level Before (ft.): 4.14 Drilling Co.: Preferred
Date Installed: 7.23.02 Static Water Level After (ft.): 4.28 Project Name: CTO 230
Date Developed: 7.23.02 Screen Length (ft.): 10 Project Number: N 4195
Dev. Method: Pump Specific Capacity: ____
Pump Type: Centrif Casing ID (in.): 2"

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1400		5	4.55	27.2	6.14	0.734	999	GRAY & SILTY
1403		30	4.72	24.8	6.81	0.717	117	clearing
1405		45	5.00	24.2	6.80	0.700	49	clear
1407		55	5.01	24.1	6.79	0.701	48	clear
								NO HC ODORS
								STRONG RECHARGE
								WELL NEXT TO
								H_2O BODY

Tetra Tech NUS. Inc.
CERTIFICATE OF CONFORMANCE

Well Designation: MPT 283-MW01
Site Name: BLD 283
Date Installed: 7-23-02
Project Name: Building 283

Site Geologist: D S
Drilling Company: Preferred
Driller: Doug
Project Number: 4195

Material	Brand/Description	Source/Supplier	Sample Collected ?
Well Casing	2"	ATLANTIC DRILLING Supply	NO
Well Screen	2"		
End Cap			
Drilling Fluid	—		
Drilling Fluid Additives	—		
Backfill Material	20/30 US		
Annular Filter Pack	20/30		
Bentonite Seal			
Annular Grout	Portland	--	
Surface Cement	QUIKRET	--	
Protective Casing			
Paint			
Rod Lubricant			
Compressor Oil			
Manhole & Cover	—	"	

To the best of my knowledge, I certify that the above described materials were used during installation of this monitoring well.

Signature of Site Geologist: R C

APPENDIX F
MOBILE LABORATORY ANALYTICAL RESULTS

KB LABS, INC.
6821 Southwest Archer Road
Gainesville, Florida 32608
***Telephone* (352) 367-0073**
***Fax* (352) 367-0074**
Email: kblabs@gator.net

July 17, 2002

Mark Peterson
Project Manager
Tetra Tech NUS, Inc.
7018 A. C. Skinner Parkway, Suite 250
Jacksonville, Florida 32256

RE: NS Mayport Tank Site 283 (CTO 230) Final Data Report
Mayport, Florida
KB Labs Project # 02-057-1

Dear Mr. Peterson:

Enclosed is the final report of the on-site analysis performed by KB Labs, Inc. at the above referenced site. Samples were collected and analyzed on July 9 and 10, 2002. Included are a brief project narrative, data report narrative, tables listing quality control results, final analytical results, and sample chain-of-custody form. This information will also be sent electronically.

KB Labs is approved as a mobile laboratory for volatiles analyses and operates under an FDEP approved Comprehensive Quality Assurance Plan (CompQAP #980029 Revision 3). Unless otherwise stated in our CompQAP under method modifications, all data for the site referenced above were determined in accordance with published procedures under Test Methods for Evaluating Solid Waste (EPA SW-846, Update III Revised May 1997). Unless otherwise indicated on the quality control narrative accompanying the data report, the quality assurance and quality control procedures performed in conjunction with analysis of groundwater samples demonstrated that the reported data met our CompQAP requirements for accuracy and precision.

If you have any questions, please do not hesitate to call me or Kelly Bergdoll, President of KB Labs, at (352) 367-0073.

Sincerely,

KB Labs, Inc.

Todd Romero
Director of Operations

"KB Labs is a small, woman-owned business enterprise."

KB LABS, INC.

PROJECT NARRATIVE

Client:	Tetra Tech	**Driller/Sampler:**	Tetra Tech	**Analyst:**	Brad Weichert
Site:	Mayport Tank Site 283	**KB Labs Project Manager:**	Kelly Bergdoll	**KB Labs Project #:**	02-057-1
Onsite Dates:	07/09/02-07/10/02	**Client Project Manager:**	Mark Peterson	**Matrix:**	Water/Soil

Project Scope

On July 9 through 10, 2002, a total of 14 groundwater samples and 10 soil samples were collected at NS Mayport Tank Site 283 in Mayport, FL by Tetra Tech NUS and relinquished to KB Labs' Mobile Laboratory. The samples were analyzed on-site for MTBE, Benzene, Ethylbenzene, Toluene, Xylenes, Naphthalene, and 1-& 2-Methylnaphthalene.

Analytical Procedure

All water samples were analyzed using SW846 Method 5030/8260 for waters. Ten (10) milliliters (mL) of water were purged with helium and the volatile organic compounds (VOCs) were collected on a solid-phase adsorption trap. The adsorption trap was heated and back-purged with helium and the components were separated by capillary column gas chromatography and measured with a mass spectrometer (GC/MS) operated in the electron impact full-scan mode. The individual VOCs in the samples were measured against corresponding VOC standards.

The soil samples were analyzed using SW846 Method 5030/8260. One (1) gram (g) of soil sample was added to 10 mL of laboratory reagent water, heated and analyzed like a water sample as described above.

Unless otherwise indicated, soil data is calculated based on the matrix received (i.e. wet weight basis).

Analytical Results

Laboratory results were provided to the client on an as-completed or next-day basis. Final results of the on-site analyses are provided in a hardcopy report. The data produced and reported in the field has been reviewed and approved for this final report by the Director of Operations for KB Labs.

Quality Control (QC) Data

Surrogate Recoveries – Table 1 lists the daily analytical sequence and percent recovery results for surrogate compounds, which were added to all analyses. Four (4) surrogate compounds were added to each analysis in order to continually monitor general method performance.

MS/MSD/LCS Recoveries – Table 2 lists the percent recovery results for matrix spike samples and laboratory control spikes. A known amount of each target compound was added to selected field samples and to laboratory reagent water in order to monitor the performance of each of the target compounds in the actual matrix and in laboratory reagent water.

Method Blanks – Daily analysis of laboratory reagent water samples was performed in order to monitor the cleanliness of the analytical system.

Signature: _____

Title: Director of Operations

Date: 7/12/02

KB LABS, INC.

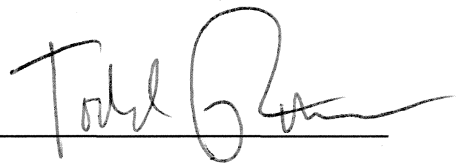
DATA REPORT NARRATIVE

Client:	Tetra Tech	**Driller/Sampler:**	Tetra Tech	**Analyst:**	Brad Weichert
Site:	Mayport Tank Site 283	**KB Labs Project Manager:**	Kelly Bergdoll	**KB Labs Project #:**	02-057-1
Onsite Dates:	07/09/02-07/10/02	**Client Project Manager:**	Mark Peterson	**Matrix:**	Water/Soil

1. All samples have been reviewed and, if required, updated in the Final Data Report for rounding and significant figures.

2. The Chain-of-Custody was corrected to reflect MPT-283-SB04-03.

3. Reporting limits are concurrent with the Detection Limit Requirements identified in the Statement of Work.

Signature: 

Title: Director of Operations

Date: 7/18/02

KB LABS, INC.

Table 1: Analytical Run Sequence/Surrogate Percent Recoveries

Client: Tetra Tech	**Driller/Sampler**: Tetra Tech	**Analyst:** Brad Weichert
Site: Mayport Tank Site 283	**KB Labs Project Manager**: Kelly Bergdoll	**KB Labs Project No:** 02-057-1
On-site Dates:07/09/02-07/10/02	**Client Project Manager**: Mark Peterson	**Matrix:** Water/Soil

Sample ID	Date of Analysis	Surrogate % Recovery				Surrogate Control Limits: 80%(LCL) to 120%(UCL)			
		S1*	S2*	S3*	S4*	S1*	S2*	S3*	S4*
BLANK	07/09/02	103	103	96	94	Pass	Pass	Pass	Pass
1UG/L	07/09/02	103	111	96	101	Pass	Pass	Pass	Pass
5UG/L	07/09/02	92	90	102	98	Pass	Pass	Pass	Pass
20UG/L	07/09/02	86	98	98	99	Pass	Pass	Pass	Pass
100UG/L	07/09/02	107	114	104	97	Pass	Pass	Pass	Pass
BLANK	07/09/02	104	96	92	104	Pass	Pass	Pass	Pass
MPT-283-SB01-03	07/09/02	109	95	104	106	Pass	Pass	Pass	Pass
MPT-283-SB02-03	07/09/02	97	89	101	123	Pass	Pass	Pass	> UCL
MPT-283-SB03-03	07/09/02	107	97	104	103	Pass	Pass	Pass	Pass
MPT-283-SB04-03	07/09/02	103	88	95	106	Pass	Pass	Pass	Pass
MPT-283-SB05-03	07/09/02	108	106	98	110	Pass	Pass	Pass	Pass
MPT-283-SB06-2.6	07/09/02	127	111	106	120	> UCL	Pass	Pass	Pass
MPT-283-SB07-03	07/09/02	109	96	106	117	Pass	Pass	Pass	Pass
MPT-283-SB08-03	07/09/02	99	85	102	116	Pass	Pass	Pass	Pass
MPT-283-SB09-03	07/09/02	126	103	96	129	> UCL	Pass	Pass	> UCL
MPT-283-SB10-03	07/09/02	111	94	91	119	Pass	Pass	Pass	Pass
MPT-283-SB09-03MS	07/09/02	130	104	100	105	> UCL	Pass	Pass	Pass
MPT-283-SB09-03MSD	07/09/02	134	106	112	120	> UCL	Pass	Pass	Pass
CCS	07/09/02	108	90	93	111	Pass	Pass	Pass	Pass
CCS	07/10/02	120	107	101	117	Pass	Pass	Pass	Pass
REF	07/10/02	129	111	108	113	> UCL	Pass	Pass	Pass
BLANK	07/10/02	132	110	99	124	> UCL	Pass	Pass	> UCL
MPT-283-GW10-05	07/10/02	121	108	96	106	> UCL	Pass	Pass	Pass
MPT-283-GW01-06	07/10/02	142	108	91	123	> UCL	Pass	Pass	> UCL
MPT-283-GW08-06	07/10/02	111	84	96	118	Pass	Pass	Pass	Pass
MPT-283-GW02-06	07/10/02	123	93	100	117	> UCL	Pass	Pass	Pass
MPT-283-GW04-06	07/10/02	108	91	104	105	Pass	Pass	Pass	Pass
MPT-283-GW06-06	07/10/02	104	98	93	113	Pass	Pass	Pass	Pass
MPT-283-GW07-06	07/10/02	115	85	96	109	Pass	Pass	Pass	Pass
MPT-283-GW09-06	07/10/02	98	86	90	93	Pass	Pass	Pass	Pass
MPT-283-GW03-06	07/10/02	116	92	95	104	Pass	Pass	Pass	Pass
MPT-283-GW05-06	07/10/02	104	84	100	105	Pass	Pass	Pass	Pass
MPT-283-GW03-06MS	07/10/02	126	89	88	112	> UCL	Pass	Pass	Pass
MPT-283-GW03-06MSD	07/10/02	105	83	102	100	Pass	Pass	Pass	Pass

***Surrogate Compounds:**
S1 = 1,2- Dichloroethane-D4
S2 = 1,2-Difluorobenzene
S3 = Toluene-D8
S4 = 4-Bromofluorobenzene

KB LABS, INC.

Table 1: Analytical Run Sequence/Surrogate Percent Recoveries

Client: Tetra Tech	**Driller/Sampler**: Tetra Tech	**Analyst:** Brad Weichert
Site: Mayport Tank Site 283	**KB Labs Project Manager**: Kelly Bergdoll	**KB Labs Project No:** 02-057-1
On-site Dates:07/09/02-07/10/02	**Client Project Manager**: Mark Peterson	**Matrix:** Water/Soil

Sample ID	Date of Analysis	Surrogate % Recovery				Surrogate Control Limits: 80%(LCL) to 120%(UCL)			
		S1*	S2*	S3*	S4*	S1*	S2*	S3*	S4*
MPT-283-GW01-34	07/10/02	114	90	86	97	Pass	Pass	Pass	Pass
MPT-283-GW01-24	07/10/02	106	95	89	115	Pass	Pass	Pass	Pass
MPT-283-GW11-06	07/10/02	126	95	96	115	> UCL	Pass	Pass	Pass
MPT-283-GW12-06	07/10/02	95	83	90	107	Pass	Pass	Pass	Pass
CCS	07/10/02	125	93	99	118	> UCL	Pass	Pass	Pass
Comments:	Although some surrogates may be out of the control percent recovery range (80% to 120%), other supporting QC, such as matrix spikes, matrix spike duplicates, method blanks, and laboratory control samples, are performed by KB Labs to further validate reported data.								

Signature: _____

Title: Director of Operations

Date: 7/18/02

***Surrogate Compounds:**
S1 = 1,2- Dichloroethane-D4
S2 = 1,2-Difluorobenzene
S3 = Toluene-D8
S4 = 4-Bromofluorobenzene

KB LABS, INC.

Table 2: VOC Spike Compound Percent Recoveries

Client: Tetra Tech	**Driller/Sampler**: Tetra Tech	**Analyst:** Brad Weichert
Site: Mayport Tank Site 283	**KB Labs Project Manager:** Kelly Bergdoll	**KB Labs Project No.:** 02-057-1
On-site Dates: 07/09/02-07/10/02	**Client Project Manager:** Mark Peterson	**Matrix:** Water/Soil

Matrix Spike/Matrix Spike Duplicate (MS/MSD):

Samples: MPT-283-SB09-03MS, MPT-283-SB09-03MSD **Date of Analysis:** 7/9/2002

Matrix Spike Compounds	Control Limits			Percent Recoveries			Control Limit Checks		
	Lower	Upper	RPD	MS	MSD	RPD	MS	MSD	RPD
Methyl-t-Butyl-Ether	57	175	20	163	156	4	Pass	Pass	Pass
2-Methyl-Naphthalene	44	140	20	59	67	12	Pass	Pass	Pass
Benzene	63	135	20	114	112	2	Pass	Pass	Pass
1-Methyl Naphthalene	53	125	20	62	74	19	Pass	Pass	Pass
Toluene	66	130	20	108	102	6	Pass	Pass	Pass
Naphthalene	0	233	20	85	101	17	Pass	Pass	Pass
Ethylbenzene	64	136	20	112	108	4	Pass	Pass	Pass
m,p-Xylene	55	143	20	110	118	7	Pass	Pass	Pass
o-Xylene	62	136	20	122	109	12	Pass	Pass	Pass

Note: Control Limits are based on semi-annual histrorical evaluation of mobile unit.

Samples: MPT-283-GW03-06MS, MPT-283-GW03-06MSD **Date of Analysis:** 7/10/2002

Matrix Spike Compounds	Control Limits			Percent Recoveries			Control Limit Checks		
	Lower	Upper	RPD	MS	MSD	RPD	MS	MSD	RPD
Methyl-t-Butyl Ether	57	175	20	111	82	29	Pass	Pass	> RPDL
2-Methyl Naphthalene	44	140	20	99	130	27	Pass	Pass	> RPDL
Benzene	63	135	20	87	85	3	Pass	Pass	Pass
1-Methyl Naphthalene	53	125	20	98	140	36	Pass	> UCL	> RPDL
Toluene	66	130	20	83	98	17	Pass	Pass	Pass
Naphthalene	0	233	20	102	133	26	Pass	Pass	> RPDL
Ethylbenzene	64	136	20	97	121	21	Pass	Pass	> RPDL
m,p-Xylene	55	143	20	99	95	4	Pass	Pass	Pass
o-Xylene	62	136	20	85	80	6	Pass	Pass	Pass

Note: Control Limits are based on semi-annual histrorical evaluation of mobile unit.

KB LABS, INC.

Table 2: VOC Spike Compound Percent Recoveries

Client: Tetra Tech	**Driller/Sampler**: Tetra Tech	**Analyst:** Brad Weichert
Site: Mayport Tank Site 283	**KB Labs Project Manager:** Kelly Bergdoll	**KB Labs Project No.:** 02-057-1
On-site Dates: 07/09/02-07/10/02	**Client Project Manager:** Mark Peterson	**Matrix:** Water/Soil

Laboratory Control Spikes (LCS):

Samples: LCS 1 **Date of Analysis:** 7/10/2002

Spike Compounds	Control Limits			Percent Recoveries			Control Limit Checks		
	Lower		Upper	LCS#1			LCS#1		
Benzene	70	to	130	116			Pass		
Toluene	70	to	130	98			Pass		
Naphthalene	70	to	130	79			Pass		
Ethylbenzene	70	to	130	115			Pass		
m,p-Xylene	70	to	130	110			Pass		
o-Xylene	70	to	130	108			Pass		

Note: Control limits are based on method guidance.

Signature: _____

Title: Director of Operations

Date: 7/18/02

KB LABS, INC.

Final Data Report

NS Mayport Tank Site 283

Mayport, FL

July 9-10, 2002

Prepared for : Tetra Tech NUS

	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID
	MPT-283-SB01-03	MPT-283-SB02-03	MPT-283-SB03-03	MPT-283-SB04-03	MPT-283-SB05-03	MPT-283-SB06-2.5	MPT-283-SB07-03	MPT-283-SB08-03	MPT-283-SB09-03	MPT-283-SB10-03
Analysis Date:	7/9/2002	7/9/2002	7/9/2002	7/9/2002	7/9/2002	7/9/2002	7/9/2002	7/9/2002	7/9/2002	7/9/2002
Matrix:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Dilution:	1	1	1	1	1	1	1	1	1	1
MTBE	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Benzene	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Toluene	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Ethylbenzene	<0.600	<0.600	<0.600	<0.600	<0.600	<0.600	<0.600	<0.600	<0.600	<0.600
Total xylenes	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Naphthalene	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
2-Methylnaphthalene	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
1-Methylnaphthalene	<6.1	<6.1	<6.1	<6.1	<6.1	<6.1	<6.1	<6.1	<6.1	<6.1

Units are ug/L for waters and mg/Kg for soils.

KB LABS, INC.
Final Data Report
NS Mayport Tank Site 283
Mayport, FL
July 9-10, 2002

Prepared for : Tetra Tech NUS

	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID
	MPT-283-GW01-06	MPT-283-GW01-24	MPT-283-GW01-34	MPT-283-GW02-06	MPT-283-GW03-06	MPT-283-GW04-06	MPT-283-GW05-06	MPT-283-GW06-06	MPT-283-GW07-06	MPT-283-GW08-06
Analysis Date:	7/10/2002	7/10/2002	7/10/2002	7/10/2002	7/10/2002	7/10/2002	7/10/2002	7/10/2002	7/10/2002	7/10/2002
Matrix:	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Dilution:	1	1	1	1	1	1	1	1	1	1
MTBE	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Benzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40
Ethylbenzene	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Total xylenes	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Naphthalene	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
2-Methylnaphthalene	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
1-Methylnaphthalene	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20

Units are ug/L for waters and mg/Kg for soils.

KB LABS, INC.
Final Data Report
NS Mayport Tank Site 283
Mayport, FL
July 9-10, 2002

Prepared for : Tetra Tech NUS

	Sample ID	Sample ID	Sample ID	Sample ID						
	MPT-283-GW09-06	MPT-283-GW10-05	MPT-283-GW11-06	MPT-283-GW12-06						
Analysis Date:	7/10/2002	7/10/2002	7/10/2002	7/10/2002						
Matrix:	Water	Water	Water	Water						
Dilution:	1	1	1	1						
MTBE	<50	<50	<50	<50						
Benzene	<1	<1	<1	<1						
Toluene	<40	<40	<40	<40						
Ethylbenzene	<30	<30	<30	<30						
Total xylenes	<20	<20	<20	<20						
Naphthalene	<20	<20	<20	<20						
2-Methylnaphthalene	<20	<20	<20	<20						
1-Methylnaphthalene	<20	<20	<20	<20						

Units are ug/L for waters and mg/Kg for soils.

KB LABS inc.
Mobile Laboratory Services
6821 SW Archer Road
Gainesville, FL 32608
TEL (352) 367-0073
FAX (352) 367-0074

CHAIN-OF-CUSTODY RECORD

MOBILE UNIT #

CLIENT NAME	PROJECT NAME & ADDRESS
TTNUS	Mayport NAS
SAMPLERS	**CONTACT PERSON**
TTNUS	David

BATCH # (Lab Use Only)

PRESERVATION
C Chilled
H HCL
Ot Other (see Remarks)

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS

SAMPLE FIELD ID.\ NUMBER	DATE SAMPLED	TIME SAMPLED	COMP.	GRAB	DATE REC'D	TIME REC'D	STATION LOCATION / No.	SAMPLE MATRIX	NUMBER OF CONTAINERS	VOLATILES	COMMENT
NAPS-283-SB01-03	7/9/02	1122			7/9/02	1122		S	1	✓	
SB02-03		1128				1128					
SB03-03		1146				1146					
SB04-03		1301				1301					
SB05-03		1329				1324					
SB06-25		1341				1341					
SB07-03		1406				1406					
SB08-03		1428				1428					
SB09-03		1510				1510					
SBD-03		1545				1545					

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time	**Remarks and Observations**
Pre-cleaned Containers Relinquished by: *(Signature)*	7/9/02			
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time 7/9/02	

Matrix Types S Soil SW Surface Water GW Ground Water SG Soil Gas

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Gainesville, FL 32608
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CHAIN-OF-CUSTODY RECORD

MOBILE UNIT #

CLIENT NAME	PROJECT NAME & ADDRESS
TETRA TECH	Mayport NAS
SAMPLERS	CONTACT PERSON
TETRA TECH	David

BATCH # **(Lab Use Only)**

PRESERVATION
C Chilled
H HCL
Ot Other (see Remarks)

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS

SAMPLE FIELD ID.\ NUMBER	DATE SAMPLED	TIME SAMPLED	COMP.	GRAB	DATE REC'D	TIME REC'D	STATION LOCATION / No.	SAMPLE MATRIX	NUMBER OF CONTAINERS	VOLATILES	COMMENT
MPT-283-GW10-05	7/10/02	0925		✓	7/10/02	0925		W	2	✓	
GW01-06		0935				0935					
GW02-06		0945				0945					
GW03-06		0950				0950					
GW04-06		0955				0955					
GW05-06		1010				1010					
GW06-06		1020				1020					
GW07-06		1030				1030					
GW08-06		1045				1045					
GW09-06		1100				1100					
GW01-34		1515				1515					
GW01-24		1540				1540					
GW11-06		1555				1555					
GW12-06		1650				1650					

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time	**Remarks and Observations**
	7/10/02			
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time	
			7/10/02	

Matrix Types S Soil SW Surface Water GW Ground Water SG Soil Gas

APPENDIX G
FIXED-BASE LABORATORY ANALYTICAL RESULTS

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **M. PETERSON** **DATE:** **AUGUST 29, 2002**

FROM: **ETHAN G. LEE** **COPIES:** **DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – LEAD**
NS MAYPORT – CTO 230
SAMPLE DELIVERY GROUP (SDG) – F14055

SAMPLES: 2/AQUEOUS/

MPT-283-EQUIP-01 MPT-283-MW01S-01

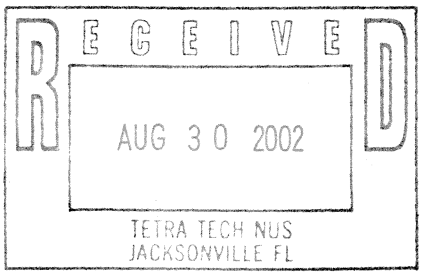
Overview

The sample set for NS Mayport, CTO 230, SDG F14055, consists of one (1) aqueous environmental sample and one (1) equipment blank.

The samples were analyzed for lead. The samples were collected by Tetra Tech NUS July 30, 2002 and analyzed by Accutest Laboratories Southeast, Inc. Lead analyses were conducted using method SW846 6010B.

Metals analyses were conducted using Inductively Coupled Plasma (ICP) methodologies.

These data were evaluated based on the following parameters:



* • Data Completeness
* • Holding Times
* • Calibration Recoveries
• Laboratory Blank Analyses
* • Detection Limits

* - All quality control criteria were met for this parameter.

Laboratory Blank Analyses

The following contaminant was detected in the laboratory method/preparation blanks at the following maximum concentration:

Analyte	Maximum Concentration	Action Level
Lead[(1)]	3.7 ug/L	18.5 ug/L

(1) Maximum concentration present in laboratory method blank.

An action level of 5X the maximum concentration was used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. Positive results less than the action level for lead were qualified as nondetected (U) as a result of blank contamination. The field blank was not qualified for method blank contamination.

CTO 230 4.7

Executive Summary

Laboratory Performance: Lead was present in the laboratory method/preparation blanks.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994 and the NFESC document entitled "Navy IRCDQM" (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS
Ethan G. Lee
Environmental Scientist

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
N01 = Internal Standard Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4195

SDG: F14055 MEDIA: WATER DATA FRACTION: M

nsample	MPT-283-EQUIP-01
samp_date	7/30/2002
lab_id	F14055-2
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	ValQual	QualCode
LEAD	1.6	U	A

nsample	MPT-283-MW01S-01
samp_date	7/30/2002
lab_id	F14055-1
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

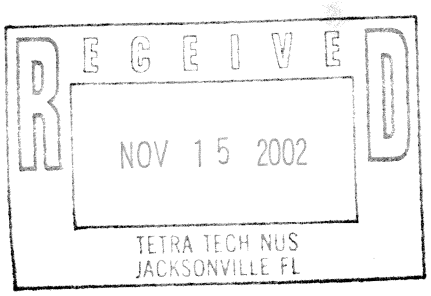
Parameter	Result	ValQual	QualCode
LEAD	2.7	U	A

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **M. PETERSON** **DATE:** **NOVEMBER 13, 2002**

FROM: **SETH C. STAFFEN** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PAH**
CTO 230, NS MAYPORT
SDG: F14900



SAMPLES: 1/AQUEOUS/PAH

MPT-283-EQ BLK

4/SOIL BORINGS/PAH

MPT-283-SB-13-SO-3 MPT-283-SB-14-SO-3
MPT-283-SB-15-SO-3 MPT-283-SB-16-SO-3

OVERVIEW

The sample set for CTO 230, SDG F14900; Naval Station (NS) Mayport consists of one (1) equipment blank and four (4) soil boring environmental samples. The samples were analyzed for select polynuclear aromatic hydrocarbons: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. No field duplicate pairs were included in this SDG.

The samples were collected on October 03, 2002 by Tetra Tech NUS, Inc. and analyzed by Accutest Laboratories. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria and analyzed according to SW 846 Method 8310 analytical and reporting protocol. The data in this SDG was validated with regard to the following parameters:

* • Data Completeness
* • Holding Times
• Initial/Continuing Calibrations
* • Laboratory Method and Field Quality Control Blank Results
• Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A.

PAH FRACTION

The initial calibration on 10/17/02 contained a relative response factor (RRF) that exceeded the 30% quality control limit for anthracene. No qualification action was taken because the other column was compliant.

ADDITIONAL COMMENTS

Positive results < Reporting Limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory Performance: Initial calibration criteria was not met for anthracene.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (October 1999) and the NFESC guidelines "Navy IRCDQM" (September 1999). The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Seth C. Staffen

Environmental Scientist/Data Validator
Tetra Tech NUS

Joseph A. Samchuck

Data Validation Quality Assurance Officer
TetraTech NUS

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

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M = Sample Preservation
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R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4195

SDG: F14900 MEDIA: SOIL DATA FRACTION: PAH

nsample	MPT-283-SB-13-SO-3
samp_date	10/3/2002
lab_id	F14900-1
qc_type	NM
units	UG/KG
Pct_Solids	85.3
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
BENZO(A)ANTHRACENE	3990		
BENZO(A)PYRENE	2340		
BENZO(B)FLUORANTHENE	1630		
DIBENZO(A,H)ANTHRACENE	408		
INDENO(1,2,3-CD)PYRENE	1700		

nsample	MPT-283-SB-14-SO-3
samp_date	10/3/2002
lab_id	F14900-2
qc_type	NM
units	UG/KG
Pct_Solids	80.4
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
BENZO(A)ANTHRACENE	918		
BENZO(A)PYRENE	626		
BENZO(B)FLUORANTHENE	427		
DIBENZO(A,H)ANTHRACENE	111		
INDENO(1,2,3-CD)PYRENE	454		

nsample	MPT-283-SB-15-SO-3
samp_date	10/3/2002
lab_id	F14900-3
qc_type	NM
units	UG/KG
Pct_Solids	84.4
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
BENZO(A)ANTHRACENE	400	U	
BENZO(A)PYRENE	81	U	
BENZO(B)FLUORANTHENE	81	U	
DIBENZO(A,H)ANTHRACENE	81	U	
INDENO(1,2,3-CD)PYRENE	81	U	

PROJ_NO: 4195

SDG: F14900 MEDIA: SOIL DATA FRACTION: PAH

nsample	MPT-283-SB-16-SO-3
samp_date	10/3/2002
lab_id	F14900-4
qc_type	NM
units	UG/KG
Pct_Solids	81.3
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
BENZO(A)ANTHRACENE	3010		
BENZO(A)PYRENE	1780		
BENZO(B)FLUORANTHENE	1220		
DIBENZO(A,H)ANTHRACENE	331	J	P
INDENO(1,2,3-CD)PYRENE	1210		

PROJ_NO: 4195

SDG: F14900 MEDIA: WATER DATA FRACTION: PAH

nsample	MPT-283-EQ BLK
samp_date	10/3/2002
lab_id	F14900-5
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
BENZO(A)ANTHRACENE	0.21	U	
BENZO(A)PYRENE	0.21	U	
BENZO(B)FLUORANTHENE	0.21	U	
DIBENZO(A,H)ANTHRACENE	0.21	U	
INDENO(1,2,3-CD)PYRENE	0.21	U	

Southeast
ACCUTEST.
Laboratories

07/30/02

Technical Report for

Tetra Tech, NUS

NAS Mayport-CTO230

N4195-P2293(SD), Tank 283

Accutest Job Number: F13797

Report to:

petersonm@ttnus.com

Total number of pages in report: 55

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Harry Behzadi, Ph.D.
Laboratory Director

Certification: Florida DOH E83510

Sample Summary

Tetra Tech, NUS

Job No: F13797

NAS Mayport-CTO230
Project No: N4195-P2293(SD), Tank 283

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
F13797-1	07/10/02	08:15	MD	07/11/02	SO	Soil	MPT-283-SB10-03

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Accutest Laboratories

Report of Analysis

Client Sample ID:	MPT-283-SB10-03		
Lab Sample ID:	F13797-1	Date Sampled:	07/10/02
Matrix:	SO - Soil	Date Received:	07/11/02
Method:	SW846 8260B	Percent Solids:	87.4
Project:	NAS Mayport-CTO230		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0017164.D	1	07/18/02	KW	n/a	n/a	VG558
Run #2							

	Initial Weight
Run #1	4.93 g
Run #2	

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	5.8	ug/kg	
108-88-3	Toluene	ND	5.8	ug/kg	
100-41-4	Ethylbenzene	ND	5.8	ug/kg	
1330-20-7	Xylene (total)	ND	17	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	5.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		75-125%
2037-26-5	Toluene-D8	102%		75-125%
460-00-4	4-Bromofluorobenzene	113%		72-137%
17060-07-0	1,2-Dichloroethane-D4	116%		68-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MPT-283-SB10-03		
Lab Sample ID:	F13797-1	Date Sampled:	07/10/02
Matrix:	SO - Soil	Date Received:	07/11/02
Method:	EPA 8310 SW846 3550B	Percent Solids:	87.4
Project:	NAS Mayport-CTO230		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	AA011338.D	5	07/18/02	MRE	07/16/02	OP5492	GAA526
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	5.0 ml
Run #2		

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	3800	ug/kg	
208-96-8	Acenaphthylene	ND	3800	ug/kg	
120-12-7	Anthracene	1740	1900	ug/kg	J
56-55-3	Benzo(a)anthracene	3490	1900	ug/kg	
50-32-8	Benzo(a)pyrene	3370	380	ug/kg	
205-99-2	Benzo(b)fluoranthene	2390	380	ug/kg	
191-24-2	Benzo(g,h,i)perylene	2070	380	ug/kg	
207-08-9	Benzo(k)fluoranthene	1670	380	ug/kg	
218-01-9	Chrysene	4170	1900	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	854	380	ug/kg	
206-44-0	Fluoranthene	13200	1900	ug/kg	
86-73-7	Fluorene	ND	1900	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	1880	380	ug/kg	
91-20-3	Naphthalene	ND	1900	ug/kg	
90-12-0	1-Methylnaphthalene	ND	1900	ug/kg	
91-57-6	2-Methylnaphthalene	ND	1900	ug/kg	
85-01-8	Phenanthrene	11500	1900	ug/kg	
129-00-0	Pyrene	8310	1900	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	66%		37-158%
92-94-4	p-Terphenyl	151% [b]		59-149%

(a) All hits confirmed by spectral match using a diode array detector.
(b) Outside control limits due to matrix interference.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MPT-283-SB10-03		
Lab Sample ID:	F13797-1	Date Sampled:	07/10/02
Matrix:	SO - Soil	Date Received:	07/11/02
Method:	FLORIDA-PRO SW846 3550B	Percent Solids:	87.4
Project:	NAS Mayport-CTO230		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP22270.D	1	07/23/02	SKW	07/22/02	OP5525	GOP809
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	56.9	9.5	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	96%		66-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

CLIENT : Tetra Tech NUS
ADDRESS: 8640 Philips Highway
Suite 16
Jacksonville, FL 32256

REPORT # : JAX31729
DATE SUBMITTED: May 15, 2003
DATE REPORTED : June 1, 2003

ATTENTION: Mr. M. Peterson

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

REFERENCE: 4195

Site 283

#1 - MPT-283-SB34(1) @ 10:15 (05/15/03)
#2 - MPT-283-SB34(3) @ 10:25 (05/15/03)
#3 - MPT-283-SB35(1) @ 10:30 (05/15/03)
#4 - MPT-283-SB35(3) @ 10:35 (05/15/03)
#5 - MPT-283-SB36(1) @ 10:45 (05/15/03)
#6 - MPT-283-SB36(3) @ 10:50 (05/15/03)
#7 - MPT-283-SB37(1) @ 11:50 (05/15/03)
#8 - MPT-283-SB37(3) @ 11:55 (05/15/03)
#9 - MPT-283-SB38(1) @ 12:00 (05/15/03)
#10 - MPT-283-SB38(3) @ 12:05 (05/15/03)
#11 - MPT-283-SB39(1) @ 12:15 (05/15/03)
#12 - MPT-283-SB39(3) @ 12:20 (05/15/03)
#13 - EQUIP 1 @ 10:00 (05/15/03)
#14 - EQUIP 2 @ 12:30 (05/15/03)
#15 - MPT-283-SB28(1) @ 13:00 (05/18/03)

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. This data has been produced in accordance with NELAC Standards (July, 1999). This report shall not be reproduced except in full, without the written approval of the laboratory. Results for these procedures apply only to the samples as submitted.

Note: Analytical values are reported on a dry weight basis.

PROJECT MANAGER _____
Scott D. Martin

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB34(1)	MPT-283-SB34(3)	Units
Naphthalene	3.5 U	3.8 U	ug/Kg
2-Methylnaphthalene	3.5 U	3.8 U	ug/Kg
1-Methylnaphthalene	3.5 U	3.8 U	ug/Kg
Acenaphthylene	3.5 U	3.8 U	ug/Kg
Acenaphthene	3.5 U	3.8 U	ug/Kg
Fluorene	3.5 U	3.8 U	ug/Kg
Phenanthrene	3.5 U	3.8 U	ug/Kg
Anthracene	3.5 U	3.8 U	ug/Kg
Fluoranthene	**3.8**	**4.1**	ug/Kg
Pyrene	**3.5**	3.8 U	ug/Kg
Chrysene	3.5 U	3.8 U	ug/Kg
Benzo(a)anthracene	3.5 U	3.8 U	ug/Kg
Benzo(b)fluoranthene	3.5 U	3.8 U	ug/Kg
Benzo(k)fluoranthene	3.5 U	3.8 U	ug/Kg
Benzo(a)pyrene	**7.7**	3.8 U	ug/Kg
Indeno(1,2,3-cd)pyrene	3.5 U	3.8 U	ug/Kg
Dibenzo(a,h)anthracene	3.5 U	3.8 U	ug/Kg
Benzo(g,h,i)perylene	3.5 U	3.8 U	ug/Kg
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
p-Terphenyl	76	72	19-162
Date Prepared	05/16/03	05/16/03	
Date Analyzed	05/21/03 00:11	05/21/03 00:32	

MISCELLANEOUS	METHOD	MPT-283-SB34(1)	MPT-283-SB34(3)	Units
Percent Solids	SM2540G	**95**	**87**	%
Date Prepared		05/15/03 21:30	05/15/03 21:30	
Date Analyzed		05/16/03 14:30	05/16/03 14:30	

U = Compound was analyzed for but not detected to the level shown.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB35(1)	MPT-283-SB35(3)	Units
Naphthalene	3.5 U	3.9 U	ug/Kg
2-Methylnaphthalene	3.5 U	3.9 U	ug/Kg
1-Methylnaphthalene	3.5 U	3.9 U	ug/Kg
Acenaphthylene	3.5 U	3.9 U	ug/Kg
Acenaphthene	3.5 U	3.9 U	ug/Kg
Fluorene	3.5 U	3.9 U	ug/Kg
Phenanthrene	**14**	**8.9**	ug/Kg
Anthracene	**5.0**	**5.0**	ug/Kg
Fluoranthene	**27**	**19**	ug/Kg
Pyrene	**20**	**14**	ug/Kg
Chrysene	**17**	**9.6**	ug/Kg
Benzo(a)anthracene	**15**	**9.3**	ug/Kg
Benzo(b)fluoranthene	**32**	**16**	ug/Kg
Benzo(k)fluoranthene	**17**	**9.3**	ug/Kg
Benzo(a)pyrene	**26**	**16**	ug/Kg
Indeno(1,2,3-cd)pyrene	**26**	**16**	ug/Kg
Dibenzo(a,h)anthracene	3.5 U	3.9 U	ug/Kg
Benzo(g,h,i)perylene	**28**	**18**	ug/Kg
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
p-Terphenyl	72	73	19-162
Date Prepared	05/16/03	05/16/03	
Date Analyzed	05/21/03 00:54	05/21/03 01:15	

MISCELLANEOUS	METHOD	MPT-283-SB35(1)	MPT-283-SB35(3)	Units
Percent Solids	SM2540G	**93**	**85**	%
Date Prepared		05/15/03 21:30	05/15/03 21:30	
Date Analyzed		05/16/03 14:30	05/16/03 14:30	

U = Compound was analyzed for but not detected to the level shown.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB36(1)	MPT-283-SB36(3)	Units
Naphthalene	3.4 U	3.5 U	ug/Kg
2-Methylnaphthalene	3.4 U	3.5 U	ug/Kg
1-Methylnaphthalene	3.4 U	3.5 U	ug/Kg
Acenaphthylene	3.4 U	3.5 U	ug/Kg
Acenaphthene	3.4 U	3.5 U	ug/Kg
Fluorene	3.4 U	3.5 U	ug/Kg
Phenanthrene	3.4 U	3.5 U	ug/Kg
Anthracene	3.4 U	3.5 U	ug/Kg
Fluoranthene	**5.8**	3.5 U	ug/Kg
Pyrene	**4.8**	3.5 U	ug/Kg
Chrysene	3.4 U	3.5 U	ug/Kg
Benzo(a)anthracene	3.4 U	3.5 U	ug/Kg
Benzo(b)fluoranthene	**5.0**	3.5 U	ug/Kg
Benzo(k)fluoranthene	3.4 U	3.5 U	ug/Kg
Benzo(a)pyrene	**8.2**	3.5 U	ug/Kg
Indeno(1,2,3-cd)pyrene	**8.5**	3.5 U	ug/Kg
Dibenzo(a,h)anthracene	3.4 U	3.5 U	ug/Kg
Benzo(g,h,i)perylene	**10**	3.5 U	ug/Kg
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
p-Terphenyl	58	59	19-162
Date Prepared	05/16/03	05/16/03	
Date Analyzed	05/21/03 01:37	05/21/03 01:59	

MISCELLANEOUS	METHOD	MPT-283-SB36(1)	MPT-283-SB36(3)	Units
Percent Solids	SM2540G	**96**	**93**	%
Date Prepared		05/15/03 21:30	05/15/03 21:30	
Date Analyzed		05/16/03 14:30	05/16/03 14:30	

U = Compound was analyzed for but not detected to the level shown.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB37(1)	MPT-283-SB37(3)	Units
Naphthalene	3.4 U	3.6 U	ug/Kg
2-Methylnaphthalene	3.4 U	3.6 U	ug/Kg
1-Methylnaphthalene	3.4 U	3.6 U	ug/Kg
Acenaphthylene	**3.7**	**3.6**	ug/Kg
Acenaphthene	3.4 U	3.6 U	ug/Kg
Fluorene	3.4 U	3.6 U	ug/Kg
Phenanthrene	**17**	**15**	ug/Kg
Anthracene	**6.7**	**6.2**	ug/Kg
Fluoranthene	**39**	**32**	ug/Kg
Pyrene	**30**	**24**	ug/Kg
Chrysene	**23**	**18**	ug/Kg
Benzo(a)anthracene	**21**	**15**	ug/Kg
Benzo(b)fluoranthene	**45**	**31**	ug/Kg
Benzo(k)fluoranthene	**26**	**21**	ug/Kg
Benzo(a)pyrene	**34**	**25**	ug/Kg
Indeno(1,2,3-cd)pyrene	**36**	**24**	ug/Kg
Dibenzo(a,h)anthracene	3.4 U	3.6 U	ug/Kg
Benzo(g,h,i)perylene	**38**	**25**	ug/Kg
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
p-Terphenyl	57	56	19-162
Date Prepared	05/16/03	05/16/03	
Date Analyzed	05/21/03 02:20	05/21/03 02:42	

MISCELLANEOUS	METHOD	MPT-283-SB37(1)	MPT-283-SB37(3)	Units
Percent Solids	SM2540G	**98**	**91**	%
Date Prepared		05/15/03 21:30	05/15/03 21:30	
Date Analyzed		05/16/03 14:30	05/16/03 14:30	

U = Compound was analyzed for but not detected to the level shown.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB38(1)	MPT-283-SB38(3)	Units
Naphthalene	3.4 U	3.9 U	ug/Kg
2-Methylnaphthalene	3.4 U	3.9 U	ug/Kg
1-Methylnaphthalene	3.4 U	3.9 U	ug/Kg
Acenaphthylene	3.4 U	3.9 U	ug/Kg
Acenaphthene	3.4 U	3.9 U	ug/Kg
Fluorene	3.4 U	3.9 U	ug/Kg
Phenanthrene	3.4 U	3.9 U	ug/Kg
Anthracene	3.4 U	3.9 U	ug/Kg
Fluoranthene	**3.4**	3.9 U	ug/Kg
Pyrene	3.4 U	3.9 U	ug/Kg
Chrysene	3.4 U	3.9 U	ug/Kg
Benzo(a)anthracene	3.4 U	3.9 U	ug/Kg
Benzo(b)fluoranthene	3.4 U	3.9 U	ug/Kg
Benzo(k)fluoranthene	3.4 U	3.9 U	ug/Kg
Benzo(a)pyrene	3.4 U	3.9 U	ug/Kg
Indeno(1,2,3-cd)pyrene	3.4 U	3.9 U	ug/Kg
Dibenzo(a,h)anthracene	3.4 U	3.9 U	ug/Kg
Benzo(g,h,i)perylene	3.4 U	3.9 U	ug/Kg
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
p-Terphenyl	39	57	19-162
Date Prepared	05/16/03	05/16/03	
Date Analyzed	05/21/03 03:03	05/21/03 03:25	

MISCELLANEOUS	METHOD	MPT-283-SB38(1)	MPT-283-SB38(3)	Units
Percent Solids	SM2540G	**96**	**84**	%
Date Prepared		05/15/03 21:30	05/15/03 21:30	
Date Analyzed		05/16/03 14:30	05/16/03 14:30	

U = Compound was analyzed for but not detected to the level shown.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB39(1)	MPT-283-SB39(3)	Units
Naphthalene	5.0	3.8 U	ug/Kg
2-Methylnaphthalene	5.0	3.8 U	ug/Kg
1-Methylnaphthalene	3.7	3.8 U	ug/Kg
Acenaphthylene	4.0	4.2	ug/Kg
Acenaphthene	17	14	ug/Kg
Fluorene	12	15	ug/Kg
Phenanthrene	180	170	ug/Kg
Anthracene	26	30	ug/Kg
Fluoranthene	220	210	ug/Kg
Pyrene	160	140	ug/Kg
Chrysene	110	98	ug/Kg
Benzo(a)anthracene	99	85	ug/Kg
Benzo(b)fluoranthene	200	140	ug/Kg
Benzo(k)fluoranthene	78	88	ug/Kg
Benzo(a)pyrene	120	110	ug/Kg
Indeno(1,2,3-cd)pyrene	110	88	ug/Kg
Dibenzo(a,h)anthracene	3.4 U	3.8 U	ug/Kg
Benzo(g,h,i)perylene	110	96	ug/Kg
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
p-Terphenyl	53	87	19-162
Date Prepared	05/16/03	05/16/03	
Date Analyzed	05/21/03 03:46	05/21/03 04:08	

MISCELLANEOUS	METHOD	MPT-283-SB39(1)	MPT-283-SB39(3)	Units
Percent Solids	SM2540G	98	86	%
Date Prepared		05/15/03 21:30	05/15/03 21:30	
Date Analyzed		05/16/03 14:30	05/16/03 14:30	

U = Compound was analyzed for but not detected to the level shown.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	EQUIP 1	EQUIP 2	Units
Naphthalene	0.10 U	0.10 U	ug/L
2-Methylnaphthalene	0.10 U	0.10 U	ug/L
1-Methylnaphthalene	0.10 U	0.10 U	ug/L
Acenaphthylene	0.10 U	0.10 U	ug/L
Acenaphthene	0.10 U	0.10 U	ug/L
Fluorene	0.10 U	0.10 U	ug/L
Phenanthrene	0.10 U	0.10 U	ug/L
Anthracene	0.10 U	0.10 U	ug/L
Fluoranthene	0.10 U	0.10 U	ug/L
Pyrene	0.10 U	0.10 U	ug/L
Chrysene	0.10 U	0.10 U	ug/L
Benzo(a)anthracene	0.10 U	0.10 U	ug/L
Benzo(b)fluoranthene	0.10 U	0.10 U	ug/L
Benzo(k)fluoranthene	0.10 U	0.10 U	ug/L
Benzo(a)pyrene	0.10 U	0.10 U	ug/L
Indeno(1,2,3-cd)pyrene	0.10 U	0.10 U	ug/L
Dibenzo(a,h)anthracene	0.10 U	0.10 U	ug/L
Benzo(g,h,i)perylene	0.10 U	0.10 U	ug/L
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
p-Terphenyl	66	64	20-148
Date Prepared	05/19/03	05/19/03	
Date Analyzed	05/20/03 19:08	05/20/03 19:29	

U = Compound was analyzed for but not detected to the level shown.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	LAB BLANK	Units
Naphthalene	0.10 U	ug/L
2-Methylnaphthalene	0.10 U	ug/L
1-Methylnaphthalene	0.10 U	ug/L
Acenaphthylene	0.10 U	ug/L
Acenaphthene	0.10 U	ug/L
Fluorene	0.10 U	ug/L
Phenanthrene	0.10 U	ug/L
Anthracene	0.10 U	ug/L
Fluoranthene	0.10 U	ug/L
Pyrene	0.10 U	ug/L
Chrysene	0.10 U	ug/L
Benzo(a)anthracene	0.10 U	ug/L
Benzo(b)fluoranthene	0.10 U	ug/L
Benzo(k)fluoranthene	0.10 U	ug/L
Benzo(a)pyrene	0.10 U	ug/L
Indeno(1,2,3-cd)pyrene	0.10 U	ug/L
Dibenzo(a,h)anthracene	0.10 U	ug/L
Benzo(g,h,i)perylene	0.10 U	ug/L

Surrogate:	% RECOV	LIMITS
p-Terphenyl	66	20-148
Date Prepared	05/19/03	
Date Analyzed	05/20/03 17:20	

U = Compound was analyzed for but not detected to the level shown.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB28(1)	LAB BLANK	Units
Naphthalene	3.4 U	3.3 U	ug/Kg
2-Methylnaphthalene	3.4 U	3.3 U	ug/Kg
1-Methylnaphthalene	3.4 U	3.3 U	ug/Kg
Acenaphthylene	3.4 U	3.3 U	ug/Kg
Acenaphthene	**7.6**	3.3 U	ug/Kg
Fluorene	**7.2**	3.3 U	ug/Kg
Phenanthrene	**79**	3.3 U	ug/Kg
Anthracene	**18**	3.3 U	ug/Kg
Fluoranthene	**140**	3.3 U	ug/Kg
Pyrene	**100**	3.3 U	ug/Kg
Chrysene	**67**	3.3 U	ug/Kg
Benzo(a)anthracene	**70**	3.3 U	ug/Kg
Benzo(b)fluoranthene	**79**	3.3 U	ug/Kg
Benzo(k)fluoranthene	**48**	3.3 U	ug/Kg
Benzo(a)pyrene	**67**	3.3 U	ug/Kg
Indeno(1,2,3-cd)pyrene	**38**	3.3 U	ug/Kg
Dibenzo(a,h)anthracene	3.4 U	3.3 U	ug/Kg
Benzo(g,h,i)perylene	**41**	3.3 U	ug/Kg
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
p-Terphenyl	93	63	19-162
Date Prepared	05/21/03	05/16/03	
Date Analyzed	05/22/03 14:22	05/20/03 22:44	

MISCELLANEOUS	METHOD	MPT-283-SB28(1)	LAB BLANK	Units
Percent Solids	SM2540G	**96**	NA	%
Date Prepared		05/23/03 11:00		
Date Analyzed		05/23/03 19:00		

NA = Analysis not applicable for this sample.
U = Compound was analyzed for but not detected to the level shown.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	**LAB BLANK**	**Units**
Naphthalene	3.3 U	ug/Kg
2-Methylnaphthalene	3.3 U	ug/Kg
1-Methylnaphthalene	3.3 U	ug/Kg
Acenaphthylene	3.3 U	ug/Kg
Acenaphthene	3.3 U	ug/Kg
Fluorene	3.3 U	ug/Kg
Phenanthrene	3.3 U	ug/Kg
Anthracene	3.3 U	ug/Kg
Fluoranthene	3.3 U	ug/Kg
Pyrene	3.3 U	ug/Kg
Chrysene	3.3 U	ug/Kg
Benzo(a)anthracene	3.3 U	ug/Kg
Benzo(b)fluoranthene	3.3 U	ug/Kg
Benzo(k)fluoranthene	3.3 U	ug/Kg
Benzo(a)pyrene	3.3 U	ug/Kg
Indeno(1,2,3-cd)pyrene	3.3 U	ug/Kg
Dibenzo(a,h)anthracene	3.3 U	ug/Kg
Benzo(g,h,i)perylene	3.3 U	ug/Kg

Surrogate:	**% RECOV**	**LIMITS**
p-Terphenyl	79	19-162
Date Prepared	05/21/03	
Date Analyzed	05/22/03 13:39	

U = Compound was analyzed for but not detected to the level shown.

LABORATORY CERTIFICATIONS

Laboratory Certification: NELAC:E82277

All analyses reported with this project were analyzed by the facility indicated unless identified below.

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 8270				
Naphthalene	58/ 60/ 58	30-112	3	28
Acenaphthene	82/ 84/ 80	28-113	2	32
Benzo(a)pyrene	135/144/129	39-148	6	38
Benzo(g,h,i)perylene	84/100/ 88	20-130	17	43
Naphthalene	62/ 72/ 61	20-131	15	29
Acenaphthene	69/ 86/ 74	24-132	22	23
Benzo(a)pyrene	137/146/122	34-140	6	28
Benzo(g,h,i)perylene	152/183/116	31-152	18	21
Naphthalene	62/ 72/ 72	20-131	15	29
Acenaphthene	69/ 86/ 84	24-132	22	23
Benzo(a)pyrene	137/146/126	34-140	6	28
Benzo(g,h,i)perylene	152/183/104	31-152	18	21

< = Less Than
MS = Matrix Spike
MSD = Matrix Spike Duplicate
LCS = Laboratory Control Standard
RPD = Relative Percent Difference

Environmental Conservation Laboratories, Inc.
4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
904 / 296-3007
Fax 904 / 296-6210
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 8640 Philips Highway
Suite 16
Jacksonville, FL 32256

REPORT # : JAX30002
DATE SUBMITTED: February 24, 2003
DATE REPORTED : March 7, 2003

ATTENTION: Mr. M. Peterson

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

REFERENCE: N4195

CTO 230 Tank 283

02/24/03

#1 - MPT-283-SB-17 @ 09:25
#2 - MPT-283-SB-18 @ 09:20
#3 - MPT-283-SB-19 @ 09:30
#4 - MPT-283-SB-20 @ 09:35
#5 - MPT-283-SB-21 @ 09:40
#6 - MPT-283-SB-22 @ 09:41
#7 - MPT-283-SB-23 @ 10:20
#8 - MPT-283-SB-24 @ 10:25
#9 - MPT-283-SB-25 @ 10:50
#10 - MPT-283-SB-26 @ 10:45
#11 - MPT-283-SB-27 @ 12:20
#12 - MPT-283-SB-28 @ 12:30
#13 - MPT-283-SB-29 @ 12:25
#14 - MPT-283-SB-30 @ 13:10
#15 - MPT-283-SB-31 @ 13:05
#16 - MPT-283-SB-32 @ 13:30
#17 - MPT-283-SB-33 @ 13:35

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. This data has been produced in accordance with NELAC Standards (July, 1999). This report shall not be reproduced except in full, without the written approval of the laboratory. Results for these procedures apply only to the samples as submitted.

PROJECT MANAGER Scott D Mart
Scott D. Martin

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB-17	MPT-283-SB-18	Units
Naphthalene	3.7 U	11	ug/Kg
2-Methylnaphthalene	3.7 U	10	ug/Kg
1-Methylnaphthalene	3.7 U	7.7	ug/Kg
Acenaphthylene	3.7 U	3.7 U	ug/Kg
Acenaphthene	3.7 U	34	ug/Kg
Fluorene	3.7 U	32	ug/Kg
Phenanthrene	7.1	340	ug/Kg
Anthracene	3.7 U	51	ug/Kg
Fluoranthene	11	470	ug/Kg
Pyrene	8.5	330	ug/Kg
Chrysene	4.0	140	ug/Kg
Benzo(a)anthracene	3.7	110	ug/Kg
Benzo(b)fluoranthene	6.3	200	ug/Kg
Benzo(k)fluoranthene	4.0	110	ug/Kg
Benzo(a)pyrene	6.0	170	ug/Kg
Indeno(1,2,3-cd)pyrene	3.7 U	180	ug/Kg
Dibenzo(a,h)anthracene	3.7 U	87	ug/Kg
Benzo(g,h,i)perylene	10	190	ug/Kg
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
p-Terphenyl	54	65	19-162
Date Prepared	02/26/03	02/26/03	
Date Analyzed	03/04/03 10:52	03/04/03 11:13	

MISCELLANEOUS	METHOD	MPT-283-SB-17	MPT-283-SB-18	Units
Percent Solids	SM2540G	89	90	%
Date Analyzed		02/25/03 12:00	02/25/03 12:00	

U = Compound was analyzed for but not detected to the level shown.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB-19		MPT-283-SB-20		Units
Naphthalene	200	D1	18 U	D2	ug/Kg
2-Methylnaphthalene	190	D1	18 U	D2	ug/Kg
1-Methylnaphthalene	140	D1	18 U	D2	ug/Kg
Acenaphthylene	73 U	D1	18 U	D2	ug/Kg
Acenaphthene	840	D1	48	D2	ug/Kg
Fluorene	840	D1	48	D2	ug/Kg
Phenanthrene	8000	D1	620	D2	ug/Kg
Anthracene	1400	D1	96	D2	ug/Kg
Fluoranthene	9100	D1	790	D2	ug/Kg
Pyrene	6400	D1	540	D2	ug/Kg
Chrysene	3100	D1	270	D2	ug/Kg
Benzo(a)anthracene	2400	D1	190	D2	ug/Kg
Benzo(b)fluoranthene	3800	D1	400	D2	ug/Kg
Benzo(k)fluoranthene	2700	D1	260	D2	ug/Kg
Benzo(a)pyrene	3600	D1	320	D2	ug/Kg
Indeno(1,2,3-cd)pyrene	2400	D1	270	D2	ug/Kg
Dibenzo(a,h)anthracene	1300	D1	120	D2	ug/Kg
Benzo(g,h,i)perylene	2700	D1	300	D2	ug/Kg

Surrogate:	% RECOV	% RECOV	LIMITS
p-Terphenyl	*	*	19-162
Date Prepared	02/26/03	02/26/03	
Date Analyzed	03/04/03 18:14	03/04/03 18:36	

MISCELLANEOUS	METHOD	MPT-283-SB-19	MPT-283-SB-20	Units
Percent Solids	SM2540G	90	89	%
Date Analyzed		02/25/03 12:00	02/25/03 12:00	

* = Surrogate recovery unavailable due to sample dilution.
U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:20 dilution.
D2 = Analyte value determined from a 1:5 dilution.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB-21			MPT-283-SB-22			Units
Naphthalene	20		D2	180		D1	ug/Kg
2-Methylnaphthalene	20		D2	140		D1	ug/Kg
1-Methylnaphthalene	18	U	D2	88		D1	ug/Kg
Acenaphthylene	18	U	D2	72	U	D1	ug/Kg
Acenaphthene	89		D2	590		D1	ug/Kg
Fluorene	94		D2	660		D1	ug/Kg
Phenanthrene	830		D2	5900		D1	ug/Kg
Anthracene	170		D2	770		D1	ug/Kg
Fluoranthene	940		D2	5900		D1	ug/Kg
Pyrene	670		D2	4000		D1	ug/Kg
Chrysene	310		D2	1800		D1	ug/Kg
Benzo(a)anthracene	230		D2	1400		D1	ug/Kg
Benzo(b)fluoranthene	360		D2	2600		D1	ug/Kg
Benzo(k)fluoranthene	330		D2	1400		D1	ug/Kg
Benzo(a)pyrene	330		D2	1900		D1	ug/Kg
Indeno(1,2,3-cd)pyrene	280		D2	1400		D1	ug/Kg
Dibenzo(a,h)anthracene	130		D2	720		D1	ug/Kg
Benzo(g,h,i)perylene	300		D2	1600		D1	ug/Kg
Surrogate:	% RECOV			% RECOV			LIMITS
p-Terphenyl	*			*			19-162
Date Prepared	02/26/03			02/26/03			
Date Analyzed	03/04/03 18:58			03/04/03 19:19			

MISCELLANEOUS	METHOD	MPT-283-SB-21	MPT-283-SB-22	Units
Percent Solids	SM2540G	90	91	%
Date Analyzed		02/25/03 12:00	02/25/03 12:00	

* = Surrogate recovery unavailable due to sample dilution.
U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:20 dilution.
D2 = Analyte value determined from a 1:5 dilution.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB-23	MPT-283-SB-24	Units
Naphthalene	3.8 U	96 D1	ug/Kg
2-Methylnaphthalene	3.8 U	96 D1	ug/Kg
1-Methylnaphthalene	3.8 U	80 D1	ug/Kg
Acenaphthylene	3.8 U	73 U D1	ug/Kg
Acenaphthene	12	440 D1	ug/Kg
Fluorene	10	400 D1	ug/Kg
Phenanthrene	110	4200 D1	ug/Kg
Anthracene	19	820 D1	ug/Kg
Fluoranthene	160	5100 D1	ug/Kg
Pyrene	120	3600 D1	ug/Kg
Chrysene	64	1800 D1	ug/Kg
Benzo(a)anthracene	49	1300 D1	ug/Kg
Benzo(b)fluoranthene	95	2700 D1	ug/Kg
Benzo(k)fluoranthene	60	1800 D1	ug/Kg
Benzo(a)pyrene	76	2000 D1	ug/Kg
Indeno(1,2,3-cd)pyrene	79	1600 D1	ug/Kg
Dibenzo(a,h)anthracene	37	730 D1	ug/Kg
Benzo(g,h,i)perylene	91	1700 D1	ug/Kg
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
p-Terphenyl	57	*	19-162
Date Prepared	02/26/03	02/26/03	
Date Analyzed	03/04/03 13:02	03/04/03 19:41	

MISCELLANEOUS	METHOD	MPT-283-SB-23	MPT-283-SB-24	Units
Percent Solids	SM2540G	86	90	%
Date Analyzed		02/25/03 12:00	02/25/03 12:00	

* = Surrogate recovery unavailable due to sample dilution.
U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:20 dilution.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB-25		MPT-283-SB-26		Units
Naphthalene	86	D1	36 U	D3	ug/Kg
2-Methylnaphthalene	71	D1	36 U	D3	ug/Kg
1-Methylnaphthalene	71 U	D1	36 U	D3	ug/Kg
Acenaphthylene	71 U	D1	36 U	D3	ug/Kg
Acenaphthene	390	D1	140	D3	ug/Kg
Fluorene	430	D1	140	D3	ug/Kg
Phenanthrene	3600	D1	1300	D3	ug/Kg
Anthracene	860	D1	320	D3	ug/Kg
Fluoranthene	3900	D1	1700	D3	ug/Kg
Pyrene	2600	D1	1200	D3	ug/Kg
Chrysene	1200	D1	590	D3	ug/Kg
Benzo(a)anthracene	1000	D1	480	D3	ug/Kg
Benzo(b)fluoranthene	1700	D1	820	D3	ug/Kg
Benzo(k)fluoranthene	1000	D1	620	D3	ug/Kg
Benzo(a)pyrene	1400	D1	670	D3	ug/Kg
Indeno(1,2,3-cd)pyrene	1100	D1	580	D3	ug/Kg
Dibenzo(a,h)anthracene	450	D1	250	D3	ug/Kg
Benzo(g,h,i)perylene	1300	D1	660	D3	ug/Kg
Surrogate:	% RECOV		% RECOV		LIMITS
p-Terphenyl	*		*		19-162
Date Prepared	02/26/03		02/26/03		
Date Analyzed	03/04/03 20:02		03/04/03 20:24		

MISCELLANEOUS	METHOD	MPT-283-SB-25	MPT-283-SB-26	Units
Percent Solids	SM2540G	93	92	%
Date Analyzed		02/25/03 12:00	02/25/03 12:00	

* = Surrogate recovery unavailable due to sample dilution.
U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:20 dilution.
D3 = Analyte value determined from a 1:10 dilution.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB-27		MPT-283-SB-28		Units
Naphthalene	36 U	D3	820	D4	ug/Kg
2-Methylnaphthalene	36 U	D3	760	D4	ug/Kg
1-Methylnaphthalene	36 U	D3	500	D4	ug/Kg
Acenaphthylene	36 U	D3	180 U	D4	ug/Kg
Acenaphthene	140	D3	2600	D4	ug/Kg
Fluorene	150	D3	2800	D4	ug/Kg
Phenanthrene	1300	D3	22000	D4	ug/Kg
Anthracene	310	D3	4300	D4	ug/Kg
Fluoranthene	1600	D3	25000	D4	ug/Kg
Pyrene	1100	D3	17000	D4	ug/Kg
Chrysene	580	D3	7100	D4	ug/Kg
Benzo(a)anthracene	470	D3	6000	D4	ug/Kg
Benzo(b)fluoranthene	980	D3	9800	D4	ug/Kg
Benzo(k)fluoranthene	400	D3	5400	D4	ug/Kg
Benzo(a)pyrene	680	D3	8700	D4	ug/Kg
Indeno(1,2,3-cd)pyrene	530	D3	6000	D4	ug/Kg
Dibenzo(a,h)anthracene	220	D3	3000	D4	ug/Kg
Benzo(g,h,i)perylene	590	D3	6000	D4	ug/Kg
Surrogate:	**% RECOV**		**% RECOV**		**LIMITS**
p-Terphenyl	*		*		19-162
Date Prepared	02/26/03		02/26/03		
Date Analyzed	03/04/03 20:46		03/04/03 21:07		

MISCELLANEOUS	METHOD	MPT-283-SB-27	MPT-283-SB-28	Units
Percent Solids	SM2540G	91	92	%
Date Analyzed		02/25/03 12:00	02/25/03 12:00	

* = Surrogate recovery unavailable due to sample dilution.
U = Compound was analyzed for but not detected to the level shown.
D3 = Analyte value determined from a 1:10 dilution.
D4 = Analyte value determined from a 1:50 dilution.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB-29		MPT-283-SB-30		Units
Naphthalene	18 U	D2	3.8 U		ug/Kg
2-Methylnaphthalene	18 U	D2	3.8 U		ug/Kg
1-Methylnaphthalene	18 U	D2	3.8 U		ug/Kg
Acenaphthylene	18 U	D2	3.8 U		ug/Kg
Acenaphthene	90	D2	11		ug/Kg
Fluorene	90	D2	10		ug/Kg
Phenanthrene	690	D2	120		ug/Kg
Anthracene	170	D2	16		ug/Kg
Fluoranthene	800	D2	150		ug/Kg
Pyrene	530	D2	100		ug/Kg
Chrysene	280	D2	50		ug/Kg
Benzo(a)anthracene	230	D2	39		ug/Kg
Benzo(b)fluoranthene	400	D2	77		ug/Kg
Benzo(k)fluoranthene	230	D2	54		ug/Kg
Benzo(a)pyrene	320	D2	58		ug/Kg
Indeno(1,2,3-cd)pyrene	270	D2	6.4		ug/Kg
Dibenzo(a,h)anthracene	64	D2	24		ug/Kg
Benzo(g,h,i)perylene	300	D2	60		ug/Kg
Surrogate:	**% RECOV**		**% RECOV**		**LIMITS**
p-Terphenyl	*		60		19-162
Date Prepared	02/26/03		02/26/03		
Date Analyzed	03/04/03 21:29		03/04/03 15:34		

MISCELLANEOUS	METHOD	MPT-283-SB-29	MPT-283-SB-30	Units
Percent Solids	SM2540G	94	88	%
Date Analyzed		02/25/03 12:00	02/25/03 12:00	

* = Surrogate recovery unavailable due to sample dilution.
U = Compound was analyzed for but not detected to the level shown.
D2 = Analyte value determined from a 1:5 dilution.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB-31			MPT-283-SB-32		Units
Naphthalene	**260**		D4	3.6	U	ug/Kg
2-Methylnaphthalene	**240**		D4	3.6	U	ug/Kg
1-Methylnaphthalene	180	U	D4	3.6	U	ug/Kg
Acenaphthylene	180	U	D4	3.6	U	ug/Kg
Acenaphthene	**1000**		D4	**7.2**		ug/Kg
Fluorene	**1000**		D4	**6.8**		ug/Kg
Phenanthrene	**8900**		D4	**87**		ug/Kg
Anthracene	**2000**		D4	**13**		ug/Kg
Fluoranthene	**10000**		D4	**130**		ug/Kg
Pyrene	**7200**		D4	**98**		ug/Kg
Chrysene	**3300**		D4	**50**		ug/Kg
Benzo(a)anthracene	**2900**		D4	**38**		ug/Kg
Benzo(b)fluoranthene	**4900**		D4	**78**		ug/Kg
Benzo(k)fluoranthene	**3600**		D4	**63**		ug/Kg
Benzo(a)pyrene	**3800**		D4	**61**		ug/Kg
Indeno(1,2,3-cd)pyrene	**3100**		D4	**59**		ug/Kg
Dibenzo(a,h)anthracene	**1400**		D4	**27**		ug/Kg
Benzo(g,h,i)perylene	**3400**		D4	**66**		ug/Kg
Surrogate:	**% RECOV**			**% RECOV**		**LIMITS**
p-Terphenyl	*			57		19-162
Date Prepared	02/26/03			02/26/03		
Date Analyzed	03/04/03 21:51			03/04/03 16:17		

MISCELLANEOUS	METHOD	MPT-283-SB-31	MPT-283-SB-32	Units
Percent Solids	SM2540G	**90**	**92**	%
Date Analyzed		02/25/03 12:00	02/25/03 12:00	

* = Surrogate recovery unavailable due to sample dilution.
U = Compound was analyzed for but not detected to the level shown.
D4 = Analyte value determined from a 1:50 dilution.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-283-SB-33	LAB BLANK	Units
Naphthalene	3.9 U	3.3 U	ug/Kg
2-Methylnaphthalene	3.9 U	3.3 U	ug/Kg
1-Methylnaphthalene	3.9 U	3.3 U	ug/Kg
Acenaphthylene	3.9 U	3.3 U	ug/Kg
Acenaphthene	3.9 U	3.3 U	ug/Kg
Fluorene	3.9 U	3.3 U	ug/Kg
Phenanthrene	3.9 U	3.3 U	ug/Kg
Anthracene	3.9 U	3.3 U	ug/Kg
Fluoranthene	3.9 U	3.3 U	ug/Kg
Pyrene	3.9 U	3.3 U	ug/Kg
Chrysene	3.9 U	3.3 U	ug/Kg
Benzo(a)anthracene	3.9 U	3.3 U	ug/Kg
Benzo(b)fluoranthene	3.9 U	3.3 U	ug/Kg
Benzo(k)fluoranthene	3.9 U	3.3 U	ug/Kg
Benzo(a)pyrene	3.9 U	3.3 U	ug/Kg
Indeno(1,2,3-cd)pyrene	3.9 U	3.3 U	ug/Kg
Dibenzo(a,h)anthracene	3.9 U	3.3 U	ug/Kg
Benzo(g,h,i)perylene	3.9 U	3.3 U	ug/Kg
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
p-Terphenyl	55	64	19-162
Date Prepared	02/26/03	02/26/03	
Date Analyzed	03/04/03 16:39	03/04/03 09:25	

MISCELLANEOUS	METHOD	MPT-283-SB-33	LAB BLANK	Units
Percent Solids	SM2540G	**84**	NA	%
Date Analyzed		02/25/03 12:00		

NA = Analysis not applicable for this sample.
U = Compound was analyzed for but not detected to the level shown.

LABORATORY CERTIFICATIONS

Laboratory Certification: FDEP:910190 NELAC:E82277

All analyses reported with this project were analyzed by the facility indicated unless identified below.

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 8270				
Naphthalene	*/ * / 62	20-131	<1	29
Acenaphthene	*/ * / 58	24-132	<1	23
Benzo(a)pyrene	*/ * / 72	34-140	<1	28
Benzo(g,h,i)perylene	*/ * /126	31-152	<1	21
MISCELLANEOUS				
Percent Solids, SM2540G	NA/ NA/100	-	NA	

< = Less Than
MS = Matrix Spike
MSD = Matrix Spike Duplicate
LCS = Laboratory Control Standard
RPD = Relative Percent Difference
* = MS/MSD/RPD unavailable due to high original sample concentration.

TETRA TECH NUS, INC. | **CHAIN OF CUSTODY** | **NUMBER** | **PAGE 1 OF 2**

PROJECT NO: N4195	**FACILITY:** CTO 230 TANK 283	**PROJECT MANAGER** MARK PETERSON	**PHONE NUMBER** (904) 636-6125
LABORATORY NAME AND CONTACT: ENCO CHRIS			
SAMPLERS (SIGNATURE)		**FIELD OPERATIONS LEADER** DAVE SIEFKEN	**PHONE NUMBER** (904) 636-6125
ADDRESS 1810 Executive Pk. Ct. Suite 211			
		CARRIER/WAYBILL NUMBER NONE	**CITY, STATE** JACKSONVILLE, FL 32216

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2003	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)	PRESERVATIVE USED	TYPE OF ANALYSIS: PAH 8270 *SELECT NONE B								COMMENTS
2/24	0925	MPT-283-SB-17		3	3	SO	G	1			1								*SEE ATTACHED
2/24	0920	MPT-283-SB-18		3	3	SO	G	1			1								
2/24	0930	MPT-283-SB-19		3	3	SO	G	1			1								
2/24	0935	MPT-283-SB-20		3	3	SO	G	1			1								
2/24	0940	MPT-283-SB-21		3	3	SO	G	1			1								
2/24	0941	MPT-283-SB-22		3	3	SO	G	1			1								
2/24	1020	MPT-283-SB-23		3	3	SO	G	1			1								
2/24	1025	MPT-283-SB-24		3	3	SO	G	1			1								
2/24	1050	MPT-283-SB-25		3	3	SO	G	1			1								
2/24	1045	MPT-283-SB-26		3	3	SO	G	1			1								
2/24	1220	MPT-283-SB-27		3	3	SO	G	1			1								
2/24	1230	MPT-283-SB-28		3	3	SO	G	1			1								
2/24	1235	MPT-283-SB-29		3	3	SO	G	1			1								

1. RELINQUISHED BY	DATE 2-24-03	TIME 1600	1. RECEIVED BY JAX30002	DATE 2/24/03	TIME 1600
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R

TETRA TECH NUS, INC. | **CHAIN OF CUSTODY** | **NUMBER** | **PAGE 2 OF 2**

PROJECT NO: N4195	**FACILITY:** CTO 280 TANK 283	**PROJECT MANAGER** MARK PETERSON	**PHONE NUMBER** (904)636-6125	**LABORATORY NAME AND CONTACT:** ENCO CHRIS
SAMPLERS (SIGNATURE)		**FIELD OPERATIONS LEADER** DAVE SIEFKEN	**PHONE NUMBER** (904)636-6125	**ADDRESS** 4810 Executive Pk. Ct. Suite 211
		CARRIER/WAYBILL NUMBER NONE		**CITY, STATE** JACKSONVILLE, FL 32216

STANDARD TAT ☒ **RUSH TAT** ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G) G

PRESERVATIVE USED NONE

TYPE OF ANALYSIS PAH 8270 *SELECT

DATE YEAR 2003	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAP (G) COMP (C)	No. OF CONTAINERS								COMMENTS
2/24	1310	IMPT-283-SB-30		3	3	SO	G	1	1							*SEE ATTACHED
2/24	1305	IMPT-283-SB-31		3	3	SO	G	1	1							
2/24	1330	IMPT-283-SB-32		3	3	SO	G	1	1							
2/24	1335	IMPT-283-SB-33		3	3	SO	G	1	1							

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	2-24-03	1600	1. RECEIVED BY Craig H JX30002	2/24/03	1600
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R